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THE RESOURCE FOR INFORMATION EXECUTIVES

Alan Westin on
Balancing Customer
Privacy with
Enterprise Needs
Page 66

**Is E-Procurement
Right for You?**
The Four Critical
Questions
Page 58

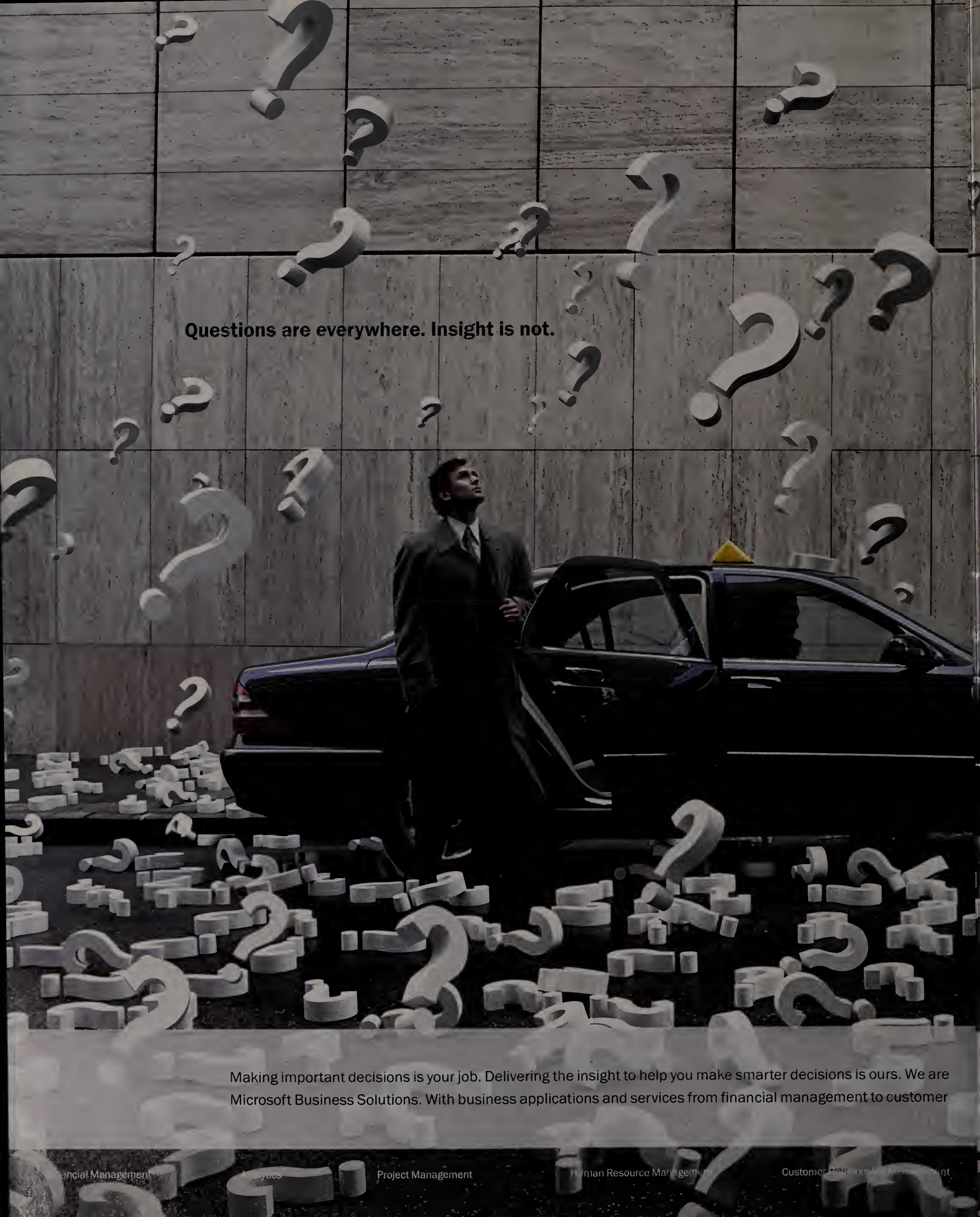
SUE UNGER'S DRIVING LESSONS

CIO Sue Unger, leaning against the new Crossfire, is one of the few top-level American executives who survived the 1998 merger that created DaimlerChrysler.

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- ❷ Major in Finance
- ❸ Learn the Business Better Than Anyone Else

**How DaimlerChrysler's CIO Designed a
Career and Engineered Her Own Success** Page 48

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A man in a dark suit and tie stands in the center of the frame, looking upwards with a contemplative expression. He is positioned in front of a large wall made of square tiles. The wall is covered with numerous 3D question marks of various sizes, some floating in the air and others embedded in the tiles. To the right of the man, a dark-colored car is parked, also with question marks floating around it. The floor is covered with a large number of 3D question marks, some of which are scattered in the foreground. The overall scene conveys a sense of being overwhelmed by questions and the need for insight.

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VOL. 16 • NO. 17 • JUNE 15, 2003

Cover Story

CIO of DaimlerChrysler | 48

SUE UNGER'S DRIVING LESSONS

Sue Unger defied the odds to become the CIO of an automotive giant despite her gender and status as a technology outsider. Here's how she did it.

By Christopher Koch

COVER PHOTO BY JIM FRENAK



"There always has to be a solid line back to IT," says DaimlerChrysler CIO Sue Unger of IT's reporting structure. "If you let it become a dotted line, you start to have a division between corporate IT and business unit IT."

Features

E-PROCUREMENT

How to Know if E-Procurement Is Right for You | 58

While some companies have achieved price reductions through online sourcing, the focus of e-procurement initiatives today is process efficiency. Here's how to decide if, what and how you should buy electronically. *By Malcolm Wheatley*

Q&A | ALAN WESTIN ON PRIVACY Balancing Act | 66

Alan Westin, who's been studying information privacy for 40 years, talks about the CIO's tricky role in protecting corporate data.

ALIGNMENT TACTICS

6 Habits of Highly Effective CIOs | 72

For top CIOs, alignment is not a goal. It's a way of life. A list of tactics that you should adopt as your own. *By Todd Datz*

ESSAY | FUTURE ARCHITECTURE

Unleashing Killer Architecture: The Shape of Things to Come | 80

Larry Downes, coauthor of *Unleashing the Killer App*, deconstructs the new-order IT architecture that will connect tomorrow's information supply chain.

MORE ►►►



"On one hand, CIOs want to comply with government's requests," says Alan Westin, professor emeritus at Columbia University and a leading privacy expert. "On the other hand, they have to worry about the trust of their customers."



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Columns

MAKING I.T. WORK Big Brother | 38

IT systems are too often used to monitor and punish rather than recognize and reward. *By Michael Schrage*

REAL VALUE ROI's Secret Ingredient | 42

Numbers aren't everything. Don't underestimate the importance of weaving a good story into your business case. *By Jack Keen*

REALITY BYTES Looking on the Sunny Side | 88

Within the gloomy clouds of economic malaise glitter the silver linings of cheap thrills and tiny triumphs. *By Megan Santosus*

Sections

TRENDLINES | 20

A rash of IT failures; It's a portal world; IT summer camps. *And more*

EMERGING TECHNOLOGY | 95

Defensive Postures

A new class of security technologies called intrusion prevention systems, or IPSs, supplement patches, firewalls and other traditional approaches to blocking out the bad guys. Many IT managers, however, are reluctant to trust this network-based tool, fearing that IPS's false alarms will shut down legitimate customer connections. *By Dylan Tweney*



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From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry; Book Talk; CIO Best-Sellers
WASHINGTON WATCH | 30
On IT regs, it's CIOs versus consultants.

EMERGING TECHNOLOGY | 95

Intrusion prevention systems offer the latest countermeasures in the war against hackers, worms and viruses. *By Dylan Tweney*

UNDER DEVELOPMENT | 100

One superfast data transfer.

In Every Issue

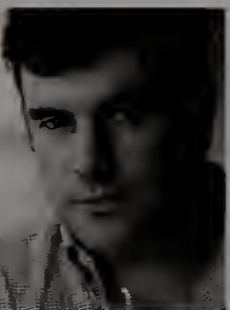
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Abstracts of all the feature stories found in this issue.



"We betray our understanding and respect for human nature by not coming up with as many ways to reward our employees as we do ways to trap them."

—Michael Schrage, CIO columnist, on employee monitoring Page 38

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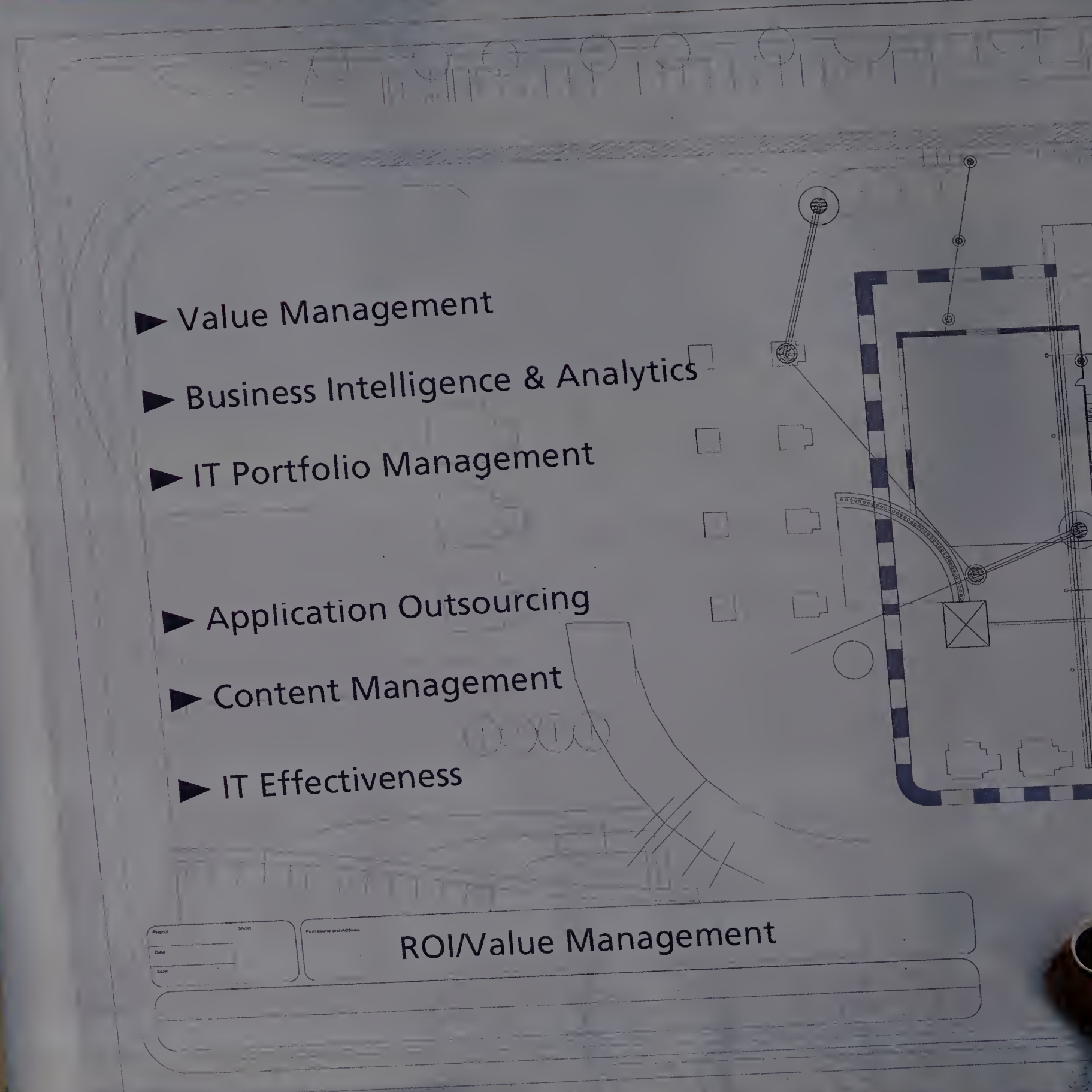
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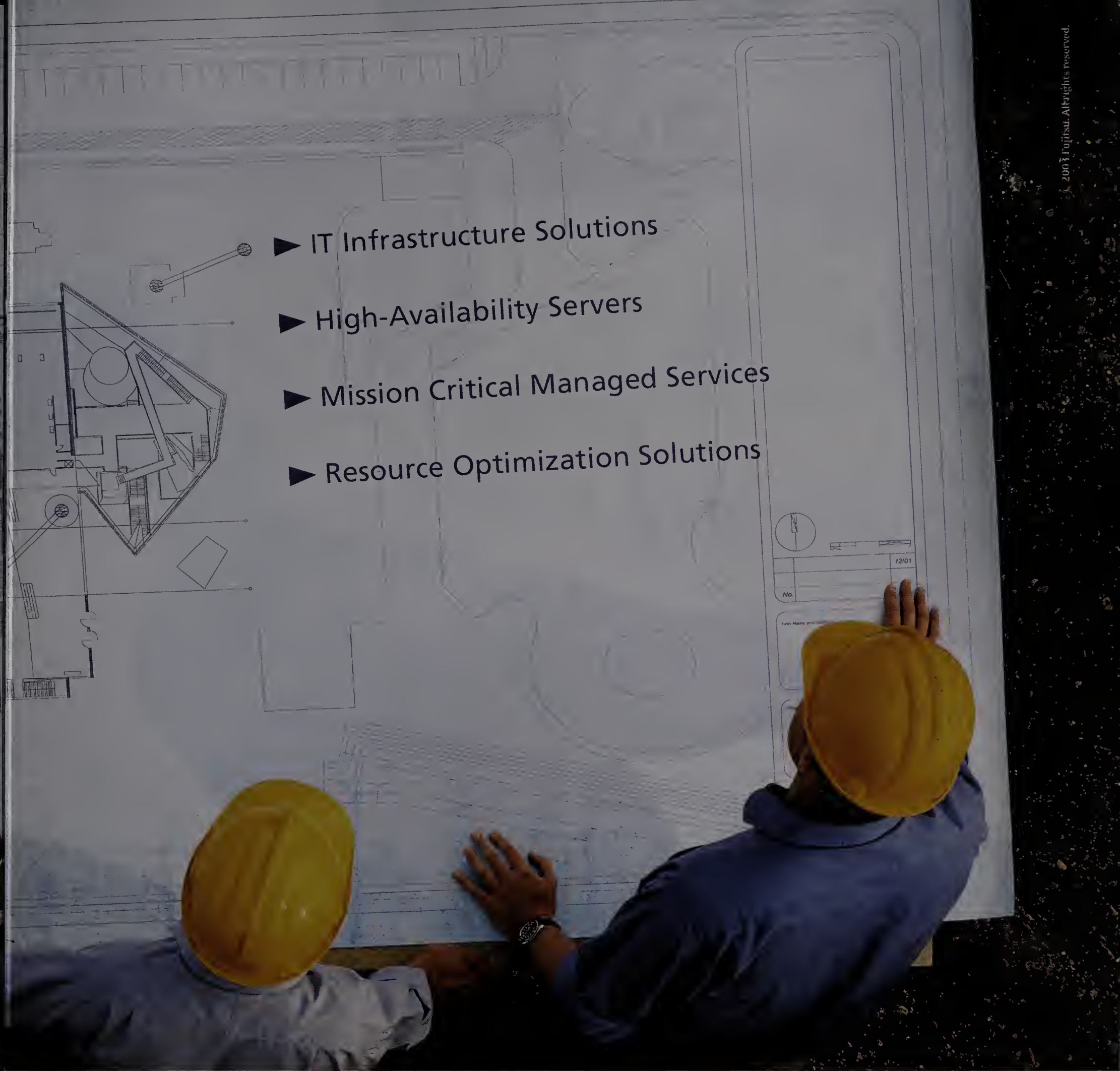


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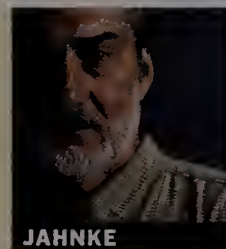
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NAVIGATING THE SITE

More for You Online: www.cio.com/daily

The online version of the issue in your hands contains more resources and information on the need-to-know subjects covered here, such as e-procurement, information privacy and alignment. Look for the **Learn More** boxes with each feature for links to pertinent stories from *CIO*, sister publications *CSO* and *Darwinmag.com* as well as IDG partners such as *Computerworld* and *Network World*. To get you quickly where you want to be on our website, we've created a new page: www.cio.com/daily. Check it out.

—Art Jahnke, Web Editorial Director



JAHNKE

INTERACTIVE >features

from June 15 to June 30

ASK THE SOURCE

Tell Larry Downes What You Think

Consultant, author, business pundit Larry Downes says we should brace ourselves for a large-scale shift in computing architecture (see **Unleashing Killer Architecture**, Page 80). Expect plenty of trauma. Prepare to make more investments in infrastructure, rethink some applications and gear up for a major transformation of your IT skills. Through July 3, tell Downes what you think—or ask him to explain himself further. Go to www.cio.com/ask.

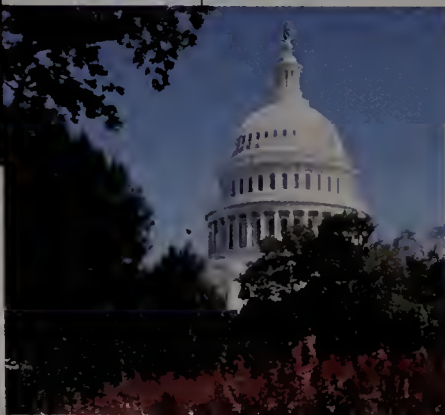


Larry Downes

LEARN MORE

Does Washington Listen?

When the government is proposing regulations that affect your technology, you certainly hope so (see **Washington Watch: On IT Regs, It's CIOs Versus Consultants**, Page 30). Allan Woods, CIO of Mellon Financial, told the Securities and Exchange Commission what he thought of a proposed data-recovery objective and got the agency to amend its guidelines. Read what he had to say and how he said it. Find the link to the Washington Watch online page from www.cio.com/current.



Our Daily Web

MONDAY Tech Tact

Technology Editor Christopher Lindquist covers what's coming.

TUESDAY Alarmed

Security experts Sarah D. Scalet and Scott Berinato give you something new to worry about.

WEDNESDAY Metrics

Web Writer Jon Surmacz makes sense of the numbers.

THURSDAY Sound Off

Web Editorial Director Art Jahnke opines on managerial, political and ethical dilemmas.

FRIDAY The Big Picture

Charts and graphs that are worth a thousand words.

EVERY WEEKDAY The News

We synthesize the top IT news stories of the day.

Add a Comment

Sue Unger left finance for IT (see **Driving Lessons**, Page 48). How did she do it? Michael Schrage says you're using IT systems as a stick, not a carrot (see **Making IT Work: Big Brother**, Page 38). So, are you? Malcolm Wheatley tells you **How to Know if E-Procurement Is Right for You** (see Page 58). Is it? Megan Santosus tries to find the silver lining (see **Reality Bytes: Looking on the Sunny Side**, Page 88). Share your opinions and advice on these and any other column or feature story. Just scroll to the bottom of the online version of the piece to **Add a Comment**.

Find links to the stories mentioned on this page at www.cio.com/daily.



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InBox

Reader Feedback

BETTER OUTSOURCING OPTIONS

I found the most recent outsourcing article ["Staff Alert," May 1, 2003] intriguing yet irresponsible. *CIO* and other magazines make the assumption that the only way to cut costs is to use an offshore company in India. I believe there are better ways.

There are organizations in the process of setting up their outsourcing models in Barbados, Trinidad and Antigua. These countries are accessible via direct flights from JFK, Miami and other major airports. They are also able to build better teams because they do not have to deal with time zone issues. Morale increases, since employees are not fearful of traveling to the countries due to health-related issues.

Also, when CIOs consider new legislation regarding homeland security, HIPAA and the ability to secure confidential information, offshoring to India and more distant countries becomes slightly irresponsible.

James McGovern • Author of Practical Guide to Enterprise Architecture • james@architectbook.com



Editor's note: CIO has never assumed or stated that India is the only offshore option for saving money; it is one of the most popular locations among many that offer various advantages and disadvantages. We highlight these in "A Buyer's Guide to Offshore Outsourcing," Nov. 15, 2002. We agree that security and other management issues need to be considered in the value equation of any offshore initiative, regardless of the country.

BUSINESS AND PERSONAL ETHICS ARE CRITICAL

I just wanted to tell you how much I enjoyed your Total Leadership column in the March 15, 2003, issue. Many businesses undervalue ethical leadership.

A recruiter recently asked me what I was looking for in a company. I said an ethical management team was critical. The recruiter actually laughed at me and told me that I'd never find a job if that was really important to me. Needless to say, I didn't work with that recruiter after that.

I finally ended up moving from a well-paying job with a market-leading company to join a startup. Much of my decision was based on the company's leader, one of those rare individuals who has business and personal ethics beyond reproach. I'm taking a big risk, but I've never been happier.

Sheila M. Droski
sheila@trustednetworktech.com

PRAISE FOR BRINGING I.T. BACK HOME

It was so refreshing to read your article ["Bringing IT Back Home," March 1, 2003]. For so long, all we heard in the industry was "everyone needs to outsource." I thought we were the only ones doing it in-house.

We saved considerable time by bringing our marketing, IT and printing in-house. In the first year alone, we saved thousands of dollars.

Before we made this step, we had zero ROI for everything. Now, the equipment and a portion of the manpower pay for themselves.

When everyone in our region asked how we do it, we replied, "We do it ourselves." Everyone thought we were crazy.

Jeffrey R. Jarzabek, IT Director

Matocha Associates

jjarzabek@matocha.com

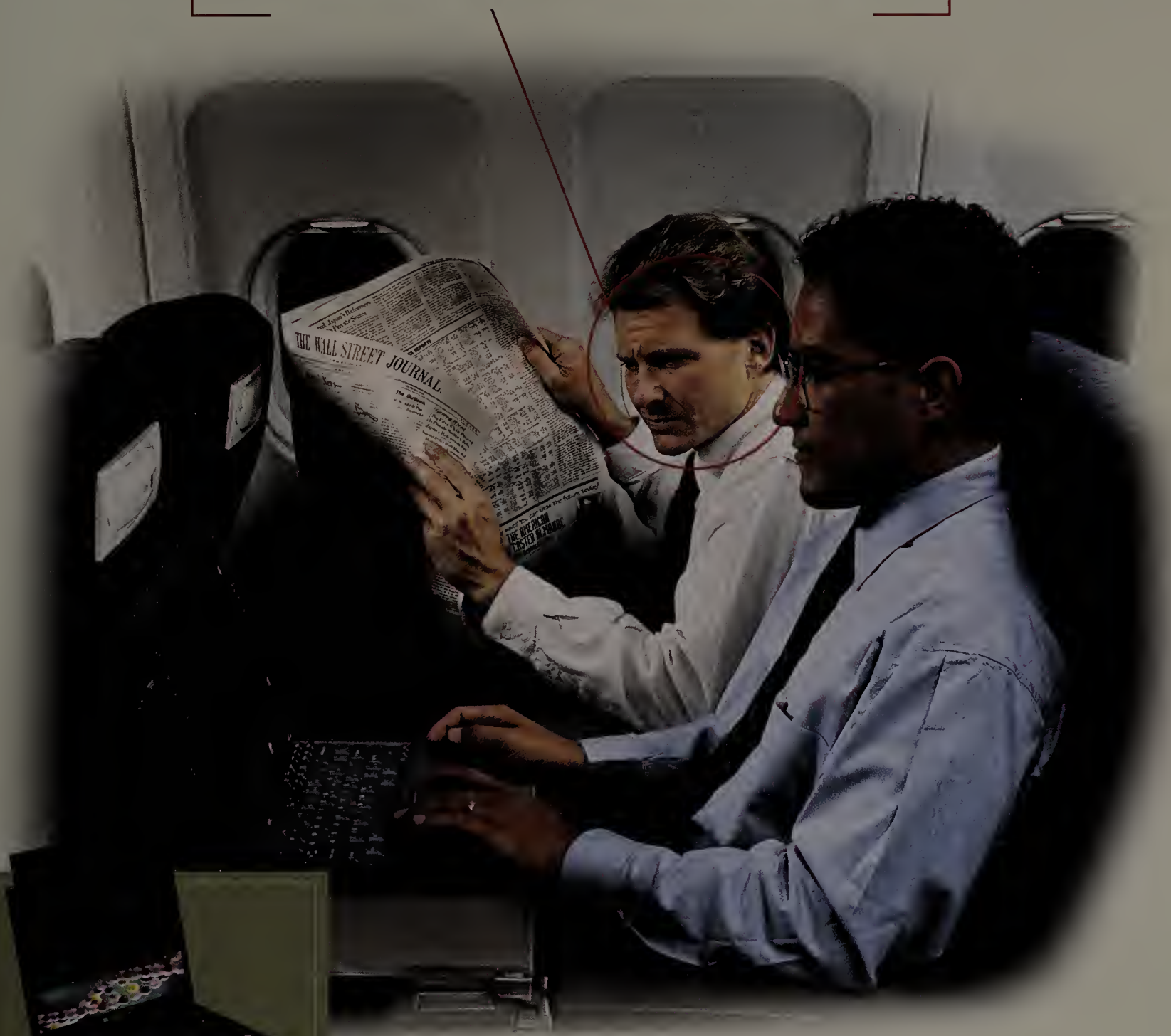
CLARIFICATION

In the article, "How to Apply EVA to IT," on Page 94 in the Jan. 15, 2003, issue, there was a potentially misleading definition of cost of capital. The description should have read: "Yet equity capital isn't actually free. The cost of equity capital that EVA addresses is determined by the future rate of return an investor would require before investing in the company's stock."

WHAT DO YOU THINK?

Send your thoughts and feedback to letters@cio.com. Letters may be edited for length or clarity. For links to all articles mentioned, go to www.cio.com/printlinks.

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With Jim Demetriades



SeeBeyond CEO Explains Why Everything You Knew About EAI Has Just Changed

You're now saying 'Everything you know about enterprise integration has just changed.' How exactly has EAI evolved over the last several years?

EAI began as a way to integrate one application with another, enabling data integration and synchronization. It then evolved to include business-to-business integration and business process integration, allowing companies to design and manage multi-step business processes. This was certainly an advance over the "spaghetti" approach of point-to-point interfaces, and has delivered a lot of business value by automating manual processes and machine-to-machine interactions.

However, this broader definition of EAI still falls short. Achieving the vision of the real-time enterprise is not simply a matter of automating business processes between systems, but also seamlessly inserting human interaction into the processes to handle exceptions. The true complexity of business processes, and the highest value, comes from handling exceptions well, and to end-users should be undistinguishable from other enterprise applications. What businesses need is a way to quickly assemble and deliver new enterprise-scale, end-user applications built by assembling existing business systems and functionality in new ways. This is where our latest offering, the SeeBeyond Integrated Composite Application Network (ICAN) Suite 5.0, comes into play.

Considering that integration costs are a significant part of software installations, do you see application development and integration coming together? If so, how?

Absolutely. Today, the IT infrastructure of most organizations has grown into a morass of disjointed systems. Traditionally, application development and integration have been completely disparate functions. The advent of the integrated composite application network changes all that. It builds upon the foundations of

both application development and integration, adding the benefit of human brainpower in building composite applications. Automation is extended to encompass human touch, allowing people and systems to interact synergistically and give business users a deep new look into their organization and its ecosystem.

This new network is really a framework for creating new, enterprise applications from existing ones. This framework is now possible thanks to the convergence of several technology and business trends, including:

- the sufficient maturation of EAI;
- the commoditization of application servers;
- the adoption and maturation of open standards, including those for Web services;
- the widespread acceptance of portal functionality;
- and the demand from customers that vendors solve business problems cost-effectively, preferably by leveraging existing IT assets.

What is SeeBeyond's technology strategy for addressing this problem?

Our ICAN Suite 5.0 provides the architecture and tools that, for the first time, enable organizations to create new end-user applications assembled using existing business logic, functionality, and human intelligence from anywhere in an organization's ecosystem. The prospective business benefits are profound: The features and capabilities of ICAN 5.0 hold the promise of significantly reducing product cycle times and the cost of ongoing maintenance, while greatly improving productivity through unprecedented ease-of-use and support for open standards.

We believe that the ICAN Suite 5.0 fulfills the long-awaited promise of middleware. It also is the latest milestone of SeeBeyond's 14-year vision of helping customers manage the flow of information across all systems, applications and enterprises on a global basis.

Advertising Supplement

What is SeeBeyond's competitive advantage in this space?

First and foremost, we have the most open and comprehensive set of integration tools available in our new ICAN Suite 5.0. We have an installed base of more than 1,800 customers including leading Global 2000 companies; a 14-year history of success; and a product suite written by a team whose senior members have been together for more than a decade. SeeBeyond knows what eBusiness and application integration can do today, and what it must do in the future.

As a company, we have been an innovation leader since the birth of the application integration industry. We introduced the first commercially available integration broker in 1991; the first fully-distributed integration architecture in 1999; and now, with the ICAN 5.0, the first business integration platform built on an open framework, including a J2EE-compliant integration server with the first composite application generator based on an open, services-oriented architecture.

"SeeBeyond knows what eBusiness and application integration can do today, and what it must do in the future."

In business terms, the goal is to give managers a clear idea of what's happening across their organizations, and the flexibility to improve whatever needs to be improved.

Any final words of wisdom for CIOs when it comes to making an integration project succeed?

Today, enterprise software equals business strategy. That means CIOs should be looking for solutions that possess the same attributes as good business strategy—namely flexibility, responsiveness, and cost-effectiveness. In the integration market, CIOs should seek vendors who understand that and who offer solutions that allow IT organizations to reach across the traditional barriers of application development and integration. Ideally, this will enable CIOs to create their future on the success of their past, without investing in a lot of new, expensive and hard-to-use technology.





Beyond Integration

Introducing the Integrated Composite Application Network (ICAN) Suite 5.0 from SeeBeyond. ICAN provides unprecedented support for open standards such as J2EE and Web services. And it is a comprehensive platform that lets you quickly create new end-user business applications by assembling business logic and functionality from the information systems you already have. With ICAN 5.0, your IT strategy can finally keep up with your business strategy. To find out how, contact us TODAY.

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Edited by Lafe Low and Michael Goldberg

HEALTH-CARE I.T.

A Rash of IT Failures

JOHN HALAMKA remains compulsive about his network for good reason. Having endured one of the worst health-care IT network outages ever last November at Beth Israel-Deaconess Medical Center, the CIO of CareGroup in Boston checks his entire network each night from home before he goes to bed. He does it again when he wakes up.

Since that network outage (see “All Systems Down” at www.cio.com/printlinks), Halamka has added some structure to the medical center’s networking policies and has refreshed some of the staff’s network management skills. But other than that—and a Slammer virus network infection on Jan. 25—Halamka continues to pursue new applications for patient care, and spreads



JOHN HALAMKA, CIO, CAREGROUP

himself as far and as thin as he possibly can with supply chain, asset management and other projects. “Our [new] application efforts are more intense than ever,” he says.

This indeed has been an intense six months for health-care CIOs in general, judging by some very public incidents (see “Health-Care System Snafus,” Page 22). Add to that the SQL Slammer virus attack that infected the six-hospital Covenant Health network based in Knoxville, Tenn., and you’ve got an infirmiry full of IT applications and infrastructures needing attention. Stat.

“All of this takes on an added sense of urgency in our industry. It’s more than an inconvenience because it impacts the delivery of care,” says Frank Clark, senior vice president and CIO of Covenant Health, who watched “the insidious Slammer,” as he calls it, take over his network.

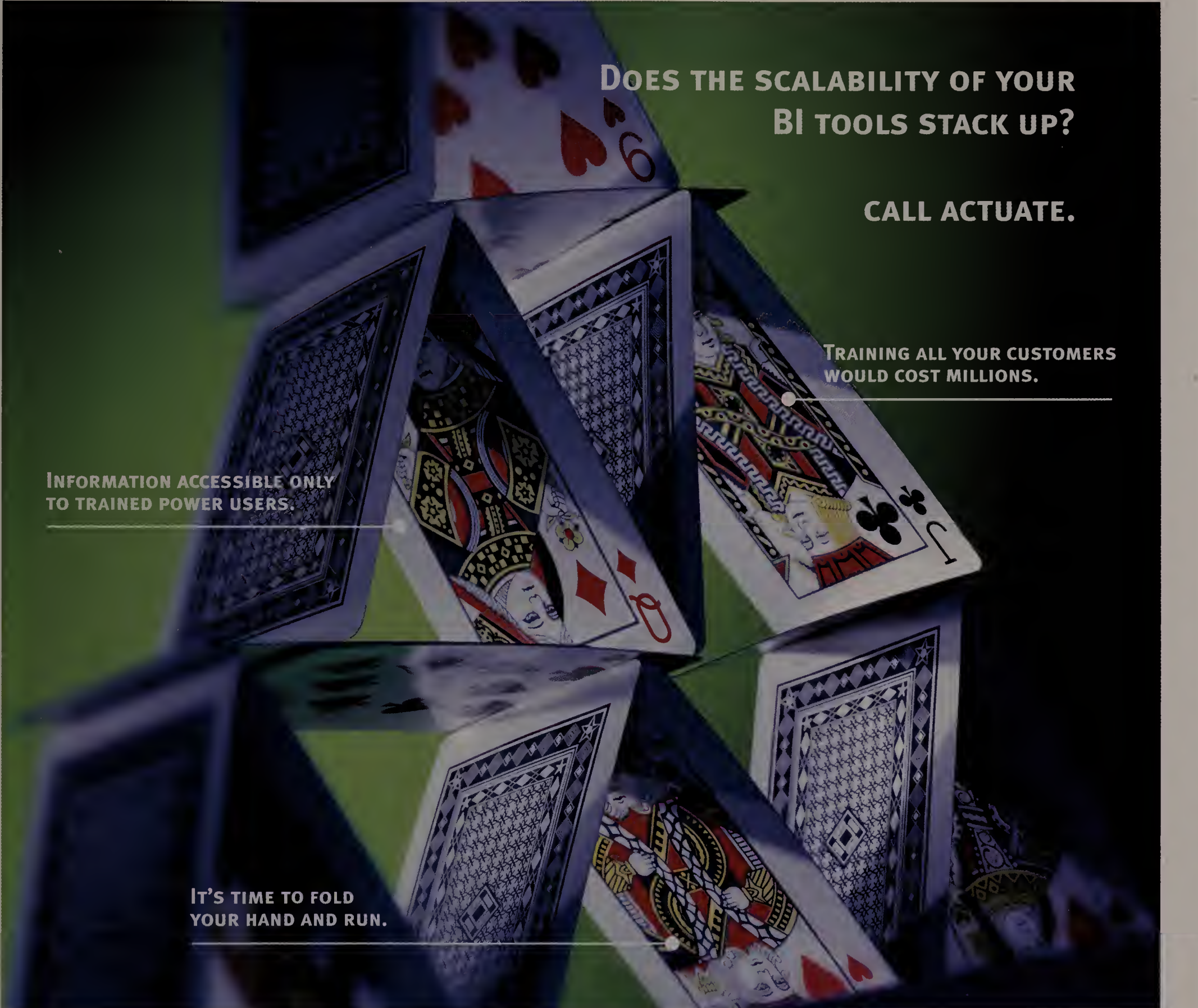
It took only two minutes, in the wee hours of a Saturday morning in January. After bouncing off Covenant’s firewalls, the worm later struck again. This time it burrowed into a prescription computer system through a single open port connected to a trusted technology partner. It took 12 hours to flush the worm from Covenant’s systems. The six hospitals resorted to manual care.

“It could have been much worse if it had been a weekday,” says Clark, who tells of the Slammer ordeal in an e-mail reacting to

Continued on Page 22

“What you learn from this is that it doesn’t take much to affect health care.”

—FRANK CLARK,
SENIOR VP AND CIO,
COVENANT HEALTH



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A Rash of IT Failures

Continued from Page 20

Halamka's story. Clark titles the missive "Misery loves company." So what's going on here? Are these incidents just plain bad luck, or are we seeing symptoms of a larger problem?

"Health care has taken quite a rap in IT investment and IT leadership" on a national level, says Elliot Stone, head of the Massachusetts Health Data Consortium, a group of health-care CIOs in the state.

Stone says these CIOs are being asked to use technology to improve care while also cutting hospital costs. These goals may conflict. At the same time, "we're talking about an industry that clearly has constrained financial resources" to begin with, Stone says.

Health-care CIOs must navigate a complex skein of regulations, doctors, hospitals, clinics, pharmacies, patients and insurance companies. And complex are the networks that connect them all.

Covenant Health's case is a good example of this interdependence. Clark's infrastructure nearly stopped Slamner. The partner company that infected his network told him its own network was infected by yet another partner. Other health-care CIOs Clark knows say Slamner slammed them when employees accessed networks from home. The trend worries Clark.

"We try to impress on people that outages will happen if this continues, but they don't think it will really happen," he says. "What you learn from this is that it doesn't take much to affect health care. We were exploited by one little vulnerability and a crude virus that just overwhelmed everybody." —Scott Berinato

Health-Care System Snafus

Add these missteps to a growing roster of computer network failures in 2002-2003

- * **Cigna's** \$1 billion IT overhaul suffers a false start, causing the health insurer to acknowledge customer defections in October.
- * **Cedars-Sinai Medical Center** suspends a computerized physician order entry deployment after doctors mutiny in January.
- * A March power outage causes **Kaiser Permanente** software to misprint labels on prescribed medications. The HMO contacts 4,700 people to verify their orders.
- * A new laboratory computer system overload at **Los Angeles County-USC Medical Center** prompts the emergency room to turn away ambulances in April.

SOURCES: CIO REPORTING, KAISER PERMANENTE, LOS ANGELES TIMES

OUTSOURCING

Offshore in Turbulent Times

THE UNITED STATES' war on terrorism has had little effect so far on companies' offshore outsourcing decisions, but CIOs continue to beef up business continuity plans for their offshore operations.

Tandy Gold, a former offshore program manager for a large Northeast bank and founder of an offshore interest group of Fortune 100 companies, says IT executives are monitoring security very closely. But for the most part, it still is business as usual.

"Experienced offshore managers will tell you that

9/11 happened here, not in India. So the days of associating safety with geography are behind us," Gold says.

The key, she adds, is knowing up front how to manage risk and understanding that cities in India have different levels

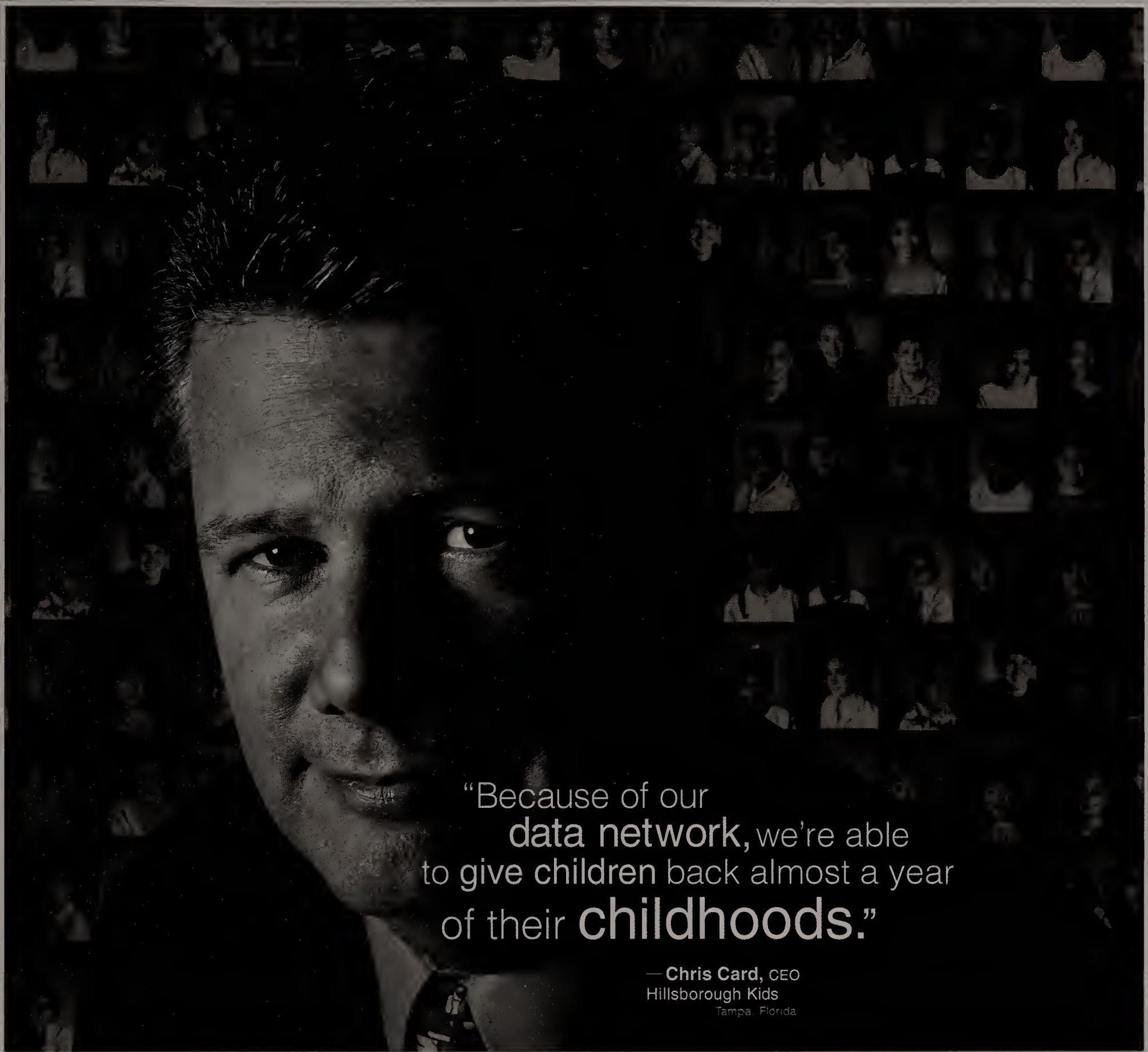
of stability. Most large companies "have sophisticated redundancies. One financial services firm has data moved regularly in three places across India as well as another three in Europe," she says.

Tensions between India and Pakistan caused a delay in some deals, says Meta Group analyst Dean Davison, adding that the conflict forced some offshore vendors to bolster their disaster recovery plans. That could happen again. (Leaders for both nations said in May that they would improve relations.)

—Stephanie Overby

What Experts Say CIOs Should Do

- Make sure that offshore providers have access to company networks through authorized gateways, but limit their ability to alter data.
- Make sure your vendor has tested risk-mitigation plans in the past month.
- If necessary, renegotiate contracts to accommodate the changing server locations, onshore rates and backup plans.
- Create action plans and cost estimates for moving some teams onshore.
- Diversify geographic risk (such as adding vendors with multiple locations).



“Because of our
data network, we’re able
to give children back almost a year
of their **childhoods.**”

— **Chris Card**, CEO
Hillsborough Kids
Tampa, Florida

“I started as a caseworker. You’d take a kid out of a bad home, everything they own in a black garbage bag, drive them someplace new and strange. Getting them to a safe and permanent home would take years. Cutting that time in half depends on our ability to access and move data from different agencies and their systems. None of that would happen if our network wasn’t reliable. Our data solution comes from Verizon. What it’s helped us do, really, is give these kids back almost a year of their childhoods.”

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Off the Shelf

Edited by Carol Zarrow

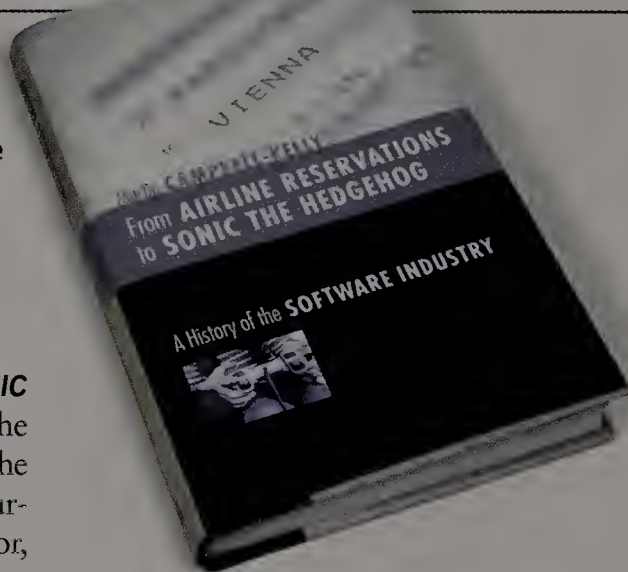
Making History

From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry

By Martin Campbell-Kelly
MIT Press, 2003, \$29.95

FROM AIRLINE RESERVATIONS TO SONIC THE HEDGEHOG is the first history of the software industry, at least according to the book jacket. That claim seems a bit surprising. Software is a high-profile sector, accounting for more than \$250 billion internationally in annual revenue. And while the industry is new, it's not *that* new. The clock started running in the late 1950s and early 1960s, writes Campbell-Kelly, when the U.S. government decided to fund several command and control systems for the military. One might reason that 40 years should have been plenty of time for someone to write a comprehensive history.

A cogent history needs a narrative core, however, and as the author points out, the software industry has never had a singular identity. Almost everything about the industry—applications, pricing, marketing—is determined by the machine and operating system on which the software runs. When hardware and operating sys-



tems change, the software changes as well.

So Campbell-Kelly's book is not so much a history of a single industry but a collection of histories that chronicle the rise of several industries. Despite its lack of continuity, however, readers will see a progression of sorts, as software and services move from being capital goods (characterized by low sales, high prices and lots of after-sales support costs) to consumer goods (with high sales, low prices and fewer after-sales support costs). Throughout these histories, common themes emerge, such as the power of first-mover advantage and the doctrine of increasing returns (each copy of software sold makes it easier to sell the next).

A third theme emerges as well, and this is the reason why this book fails to produce a coherent narrative: Software development is a field that consumes its own history. Software succeeds when it's a good fit for the current computing environment. When the environment changes, the software must change as well. Software is an industry that lives and dies by the promise of the new.

The newest promises in computing, the Internet and open source, are left uncovered. Campbell-Kelly ends his narrative in the mid-'90s, just as those twin forces are emerging. Ironically, it is possible that the historian has bowed out just as HTTP, XML and networking were about to give

CIO Best-Seller List

5 **The Iron Triangle: Inside the Secret World of the Carlyle Group**

By Dan Briody
John Wiley & Sons, 2003

4 **Leadership**
By Rudolph W. Giuliani
Miramax Books, 2002

3 **Execution: The Discipline of Getting Things Done**
By Larry Bossidy and Ram Charan
Crown Publishing Group, 2002

2 **Primal Leadership: Realizing the Power of Emotional Intelligence**
By Daniel Goleman, Richard Boyatzis and Annie McKee
Harvard Business School Press, 2002

1 **Good to Great: Why Some Companies Make the Leap...and Others Don't**
By Jim Collins
HarperCollins Publishers, 2001

SOURCE: DATA FROM FEB. 12, 2003, TO MAY 13, 2003.
COMPILED BY POWELL'S BOOKS, PORTLAND, ORE.

the industry the cohesiveness required for a true history. It is a great loss that the author didn't take on this last, tumultuous decade.

For readers who do "remember when," however, this book is a good read and a pleasant reminder. Here again, unearthed from years of magazine articles, are the stories of ADR, Cullinet, Computer Vision and dozens more companies that formed a generation of technology users, made them their friends and filled their lives. For its nostalgic value alone, this one's a keeper.

—Fred Hapgood

BOOKTALK

"What I've seen happening over time is that project management tools do a lovely job of mapping the known part of a project's future and say darn little about all the things that might happen. The idea that we can graph our way to success is an illusion and a dangerous one."

—From a CIO Radio (www.cio.com/radio) interview with Tom DeMarco and Timothy Lister, authors of *Waltzing with Bears: Managing Risk on Software Projects* (Dorset House, 2003)

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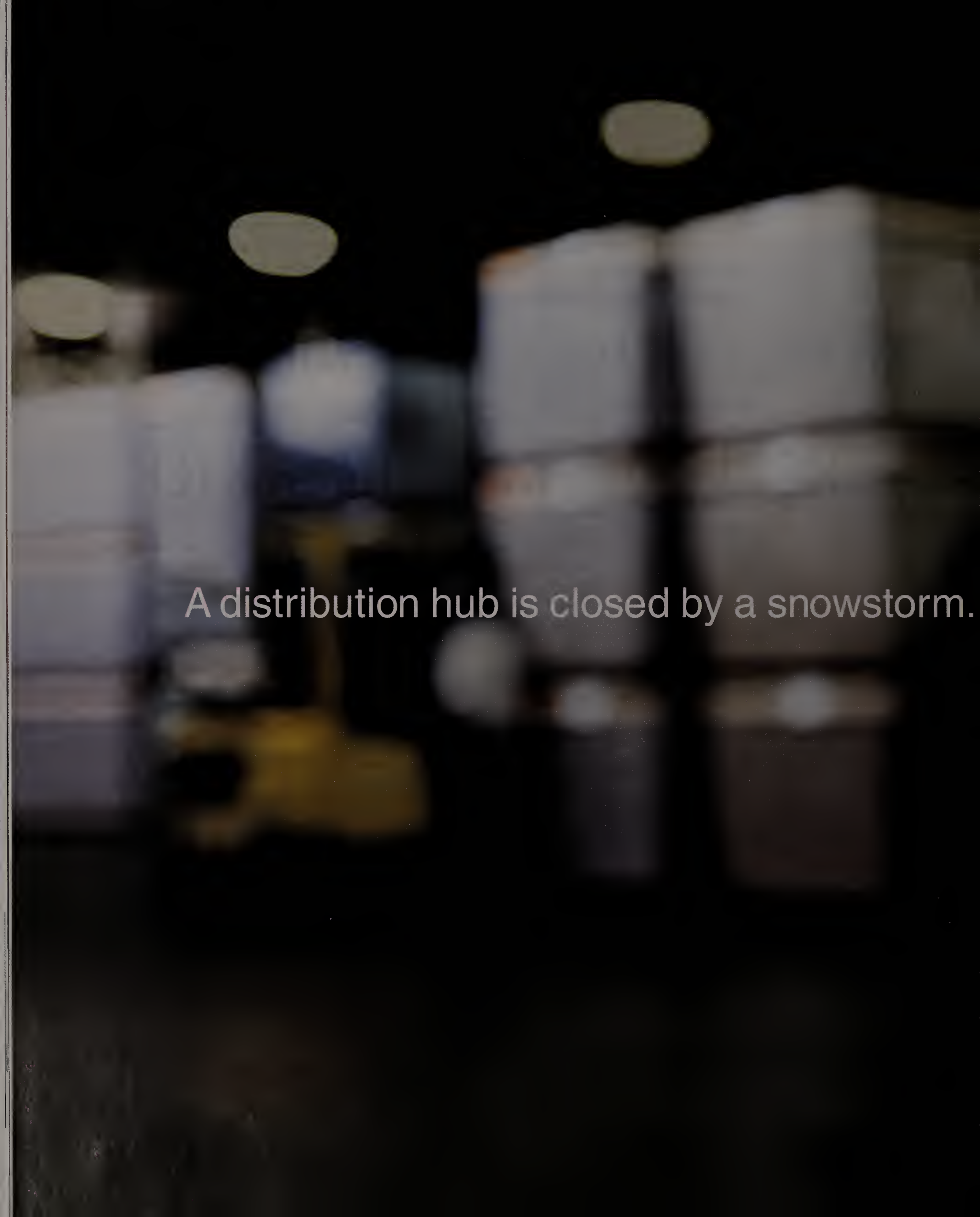
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A blurry, low-angle photograph of a warehouse interior. In the center-left, a yellow forklift is visible, slightly out of focus. To its right and in the background, there are several tall stacks of white and light-colored boxes or pallets. The floor is dark and reflective. The overall image has a soft, out-of-focus quality, suggesting a candid or documentary-style shot.

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A World of Portals

No longer just for procurement, portals show up in every industry and business process. Here are some worth noting.

Go To:  <http://www.army.mil>

The Biggest Intranet

DURING THE WAR IN IRAQ, Gen. Tommy Franks ordered the Army to cut off access to commercial Internet services such as AOL and MSN. For soldiers who made their way to a computer to send e-mail home, that left one option: the portal called Army Knowledge Online, or AKO.

The Army calls AKO—a portal for 1.4 million soldiers, National Guard, reserves, retirees and civilian staff—the largest intranet. It provides personalized information to soldiers, such as their medical readiness for deployment. The portal “makes for one less thing that a personnel clerk has to do,” says Major C.J. Wallington, AKO team leader in the Chief Technology Office. About 98 percent of those on active duty use the portal.

To sign on, users log in at the Army's site (www.army.mil). There, they have access to e-mail, instant messaging, and their personnel records and training information. In addition, more than 300 Army organizations maintain communities of expertise on AKO, such as equipment manuals for an artillery battalion. Family members can also sign up for guest accounts.

AKO uses a J2EE architecture developed by Appian. Wallington, who could only say that the Army “went through a lot of cash and has more than recouped the cost” in creating AKO, estimates that the system's single authentication process alone saves the Army roughly \$200 million. Usage at Army.mil spiked in February 2003 with war talk. The biggest day for unique user log ins: 125,000 on March 25, 2003. On that day, U.S. troops in Iraq encountered heavy fighting in southern cities of Nasiriyah and Najaf as sandstorms raged in the desert.

—Cheryl Asselin

On a Screen Near You

Portal implementations cut across industry and function

MANUFACTURING

The **Sperry-Marine** unit at Northrop Grumman helps workers in different locations manage RFIs and the subsequent projects through a portal running on software from Welcom.

Toymaker **Kids II** shares new product designs with 25 plants in Asia via a portal connected to its Mapics ERP system.

PUBLIC SECTOR

The **General Services Administration** has developed a procurement portal for federal agencies using Sybase software. It tracks almost 1.5 million products and services offered by more than 4,000 vendors.

RETAIL

Tesco.com, the British grocery giant's portal for Web and mobile phone consumers, tailors consumers' shopping views using Autonomy software.

HEALTH CARE

The **South Carolina Department of Health and Human Services** gives health workers at 150 offices immediate access to Medicaid benefits data via a Novell-based portal.

NETWORK MANAGEMENT

IT managers at Hong Kong-based **Mandarin Oriental Hotel Group** monitor its global computer network that supports hotels in 18 cities through a portal application run by InteQ.

KNOWLEDGE MANAGEMENT

Drugmaker **Eli Lilly**'s corporate portal categorizes documents that make up a molecule library for 30,000 users. The MyElvis portal integrates Lotus Notes with software from Documentum, Plumtree and Semio.

Go To:  <http://www.acushnetgolf.com>

Customer Links

THE ACUSHNET CO.'S CUSTOMER PORTAL grew organically. Two years ago, the golf equipment maker created a way for customers to check order status and get product information.

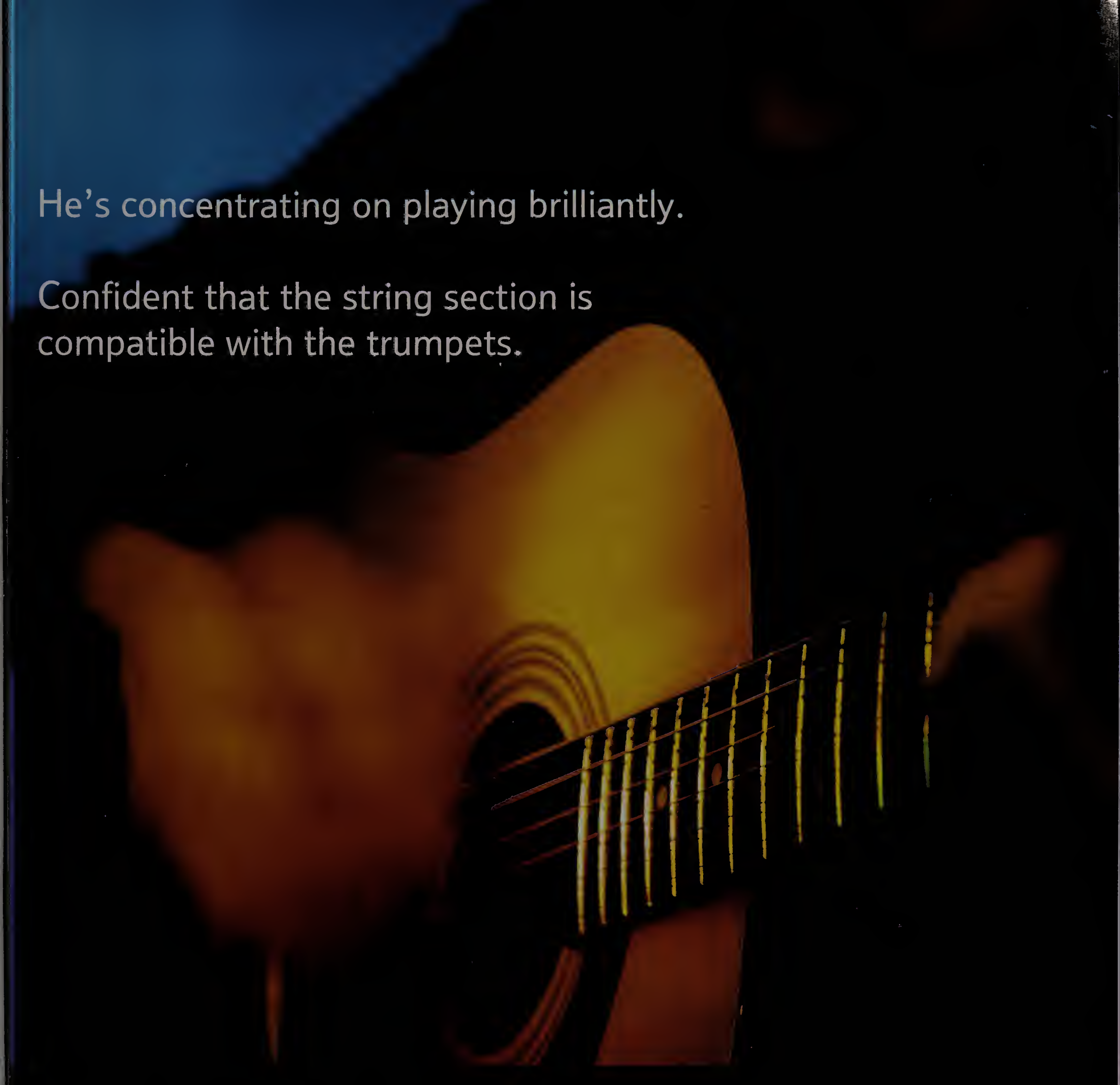
Since then, Peg Nicholson, Acushnet's senior vice president and CIO, has learned that a portal requires ongoing care. Now that about 3,500 of Acushnet's 11,000 customers (pro shops, sporting goods and other retailers) use the portal to inquire about new Cobra clubs, Titleist balls and FootJoy shoes, enter orders and pay bills, part of Nicholson's job is to keep them happy.

That means, for example, offering

users of the password-protected portal, Acushnetgolf.com, a price break on a new Dell PC. Easier product returns are on tap. Acushnet, a \$1 billion unit of Fortune Brands, implemented its portal using Click Commerce software.

Nicholson says the biggest challenge in building Acushnet's portal was reengineering business processes to get product information (price, size, brand) into the company's systems at the right time. With the portal, Acushnet has seen service calls decrease; many customers use the system after hours. Nicholson, who declined to say what Acushnet spent on the portal, says she believes it's paying off. She adds, “The ROI is there as you get more and more customers on board.”

—Megan Santosus



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CIU-IT3

Washington Watch

Edited by Elana Varon

INFLUENCE

On IT Regs, It's CIOs Versus Consultants

ENSURING THAT A COMPANY is able to comply with governmental regulations is now part of the CIO job. It is also one of the most frustrating parts. For example, new security regulations for the Health Insurance Portability and Accountability Act (HIPAA) are full of page after page of "shoulds," "needs" and "musts" that impact corporate information systems, but they almost never say how to meet the letter of the law.

"The government just says you have to do it," says Rick Skinner, vice president of information services and CIO of Providence Health System, who oversees his company's HIPAA compliance. "There is no template." CIOs are often left with this choice: Guess that the steps they are taking toward compliance are the right ones, or (more likely) hire expensive consultants. But CIOs can help create better regulations if they are willing to take a more active role in policy-making.

Many regulatory agencies such as the Department of Health and Human Services, the FCC, the FDA and the SEC have a veneer of independence, but it's no secret that they're susceptible to political pressure. In the case of regulations that affect corporate IT, the high-tech consulting industry holds sway. According to the Center for Responsive Politics, a campaign finance watchdog organization, high-tech companies and the accounting industry (which incorporates many top IT consultancies) donated more than \$36 million to 2002 political candidates and causes. These dona-

CIO.com To see an example of how one CIO responded to a proposed government policy, go to www.cio.com/printlinks.

SPAM

Lawmakers Get Creative to Fight Unwanted E-Mail

CHARGING SPAMMERS WITH RACKETEERING CRIMES and rewarding spam victims with a financial bounty are among the more creative solutions proposed by members of Congress to the problem of unsolicited e-mail.

Legislation from Sen. Bill Nelson (D-Fla.) allowing racketeering charges against spammers would enable authorities to seize the spammers' assets and let private citizens file lawsuits against them. Meanwhile, Rep. Zoe Lofgren's bill would give the first person who reports an illegal spammer a bounty of 20 percent of the fine the Federal Trade Commission eventually imposes, creating the potential for fines of \$100,000 and rewards of \$20,000 or more.

Nelson's bill addresses criticisms from antispam activists (at an FTC forum in May) that proposals like Lofgren's do not provide a way to file private lawsuits against spam-

mers. Consumer advocates and lawyers say the spam-fighting problem is caused not by the public failing to report spam but by law enforcement failing to act. Lofgren argues that the bounty would help prosecutors identify the most offensive spammers without expending many resources.

Antispam advocates praise another proposal by Sen. Charles Schumer (D-N.Y.), who wants to create a national no-spam list similar to Do Not Call lists used to discourage telemarketing. Schumer's approach would also enable private suits or law enforcement actions against spammers. —Grant Gross



Rep. Zoe Lofgren (D-Calif.)

tions buy access to lawmakers who dictate agencies' budgets and often their policies.

Lewis Branscomb, a professor at Harvard University's Kennedy School of Government who ran what is now the National Institute of Standards and Technology from 1969 to 1972, says it's an unspoken rule in Washington that regulatory agencies keep consultants who operate with many different industries in mind. Officials from the FDA, DHHS and SEC contacted for this story wouldn't comment on the record, but they say privately that they don't want to

force companies to use technology that might quickly become obsolete.

Feedback to regulators from CIOs (with the corporate counsel's blessing) is one way to make a difference. Last October, Allan Woods, CIO of Mellon Financial, told the SEC that a proposed data-recovery objective of two to four hours following a major disaster might not be technically attainable, but that eight hours was a fair goal. The SEC subsequently amended its guidelines to recommend such problems be fixed within one business day. —Ben Worthen

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S U M M E R C A M P

Gather Round the Screen, Kids

IN THE MID-1970s, Fairfield University professor Michael Zabinski won grants to train high school teachers to integrate computers into their curriculum. The experience got him thinking about ways to reach children directly. In 1978, he founded the nation's first computer camp.

For two weeks that first summer, a group of children, mostly 10 to 14 year olds, gathered in a small, junior high school classroom, drawn by the opportunity to get their hands on something most kids their age had seen only on television. They learned Basic, used Wang computers and stored their work on audiocassettes. "In those days, the super, super, super majority of kids did not have a computer at home or even at school," says Zabinski, a professor of physics and engineering. "For them, it was the mystique that attracted them to the camp."

The following year, Zabinski acquired 24 Radio Shack TRS 80s, some with floppy drives 5.25 inches wide. Now, Zabinski runs five National Computer Camps around the nation where campers learn Assembler, Basic, C++, HTML, Java, JavaScript and XML on their pick of a 2GHz PC or Mac.

Since those days, computer camps have sprung up across the country like Web pop-ups. Unlike traditional summer camps,

which feature rustic cabins by a lake, computer camps are typically held on college campuses. Campers sleep in dorm rooms. Swimming, if offered, takes place in a pool. Technology immersion is the goal.

But there is one important similarity between computer camps and their more traditional counterparts: a chance to forge lasting friendships with kindred spirits. Children who choose to spend their free time in front of a computer tend not to be the outgoing class president or star athlete type, says Corey Marx, marketing director for Seattle-based Cybercamps. "For a lot of these kids, this is a place to meet friends who have similar interests," namely a passion for technology.

Weekly rates for computer camps range from \$600 for day camp to \$1,200 for overnight programs. Kids can expect to learn Web design and multimedia gaming. Some camps offer 3-D animation and robotics. Activities might include Internet scavenger hunts. Some camps even have e-mail, though it's not always encouraged.

"Part of the summer camp experience is about getting over homesickness," says Craig Whiting, owner of Emagination Computer Camps. "If they're e-mailing their parents, it will only prolong that."

—Sharron Kahn Luttrell

SECURITY POLICY

Close That App! Right Now!

WHEN CIOs let employees use screen savers to display family photos or their kids' artwork, they're missing a valuable chance to spread the word about important security issues, says Russ Mumford.

"Companies are extremely limited in terms of resources, especially when it comes to security," says Mumford, president of GreenIdea, a San Francisco-based software developer. "There's a resource on every PC that has tremendous potential for communication." GreenIdea's Visible Statement software replaces screen saver images with animations that contain customized corporate security messages.

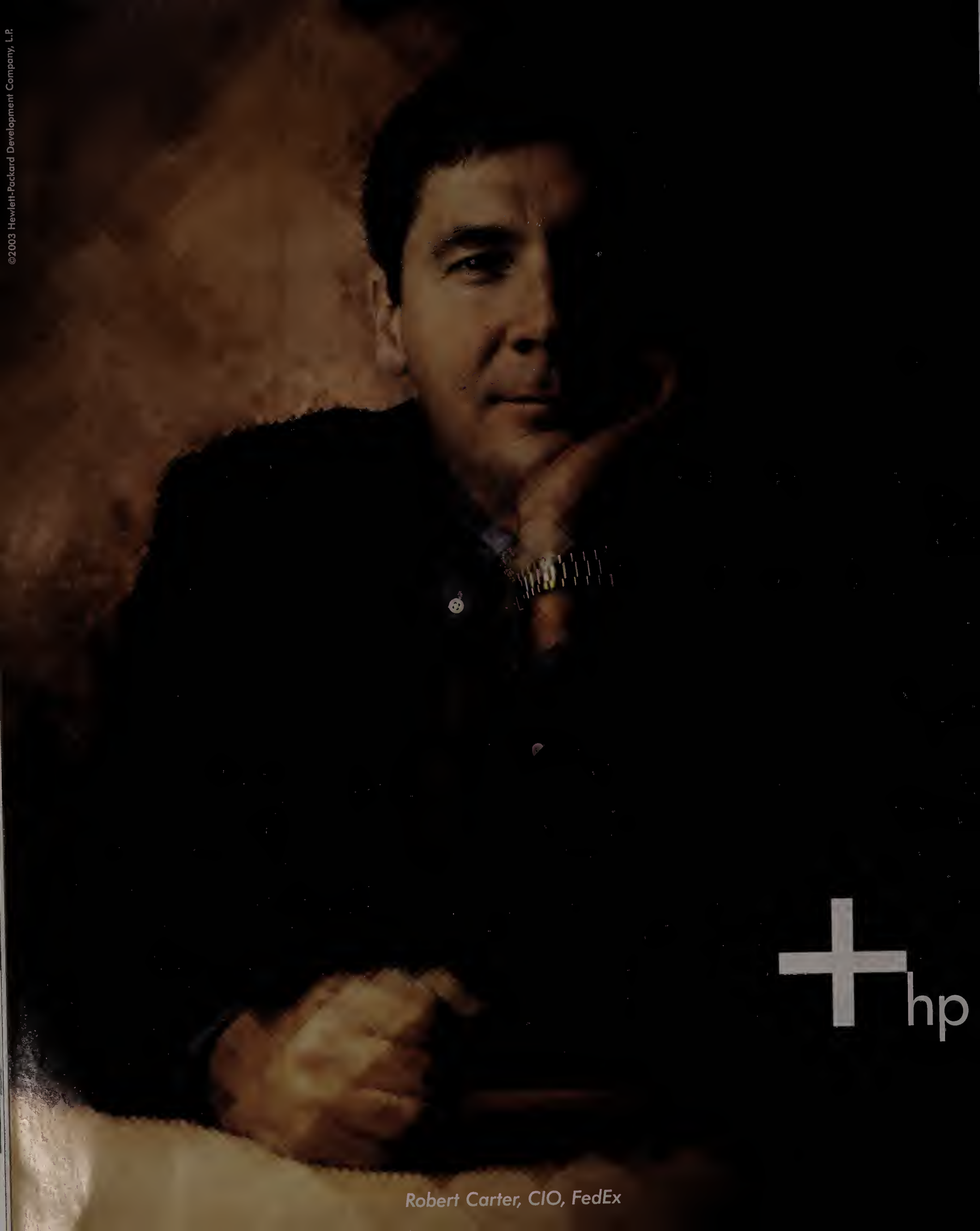
Aldo Neverez, information security policy manager at California Independent System Operator in Folsom, Calif., started using Visible Statement in 1998. "We wanted to help keep security awareness at the forefront of our employees' minds,"



Neverez says. He uses Visible Statement to display messages on 20 topics such as password security and antivirus tips.

An enterprise license for Visible Statement starts at \$795 and includes four animations. Mumford says a company's security awareness campaign should include more than just using Visible Statement. The software works best in conjunction with other modes of communication such as posters, e-mail alerts and voice-mail messages.

—Megan Santosus



Robert Carter, CIO, FedEx

Confessions of the World's Most Demanding CIOs.

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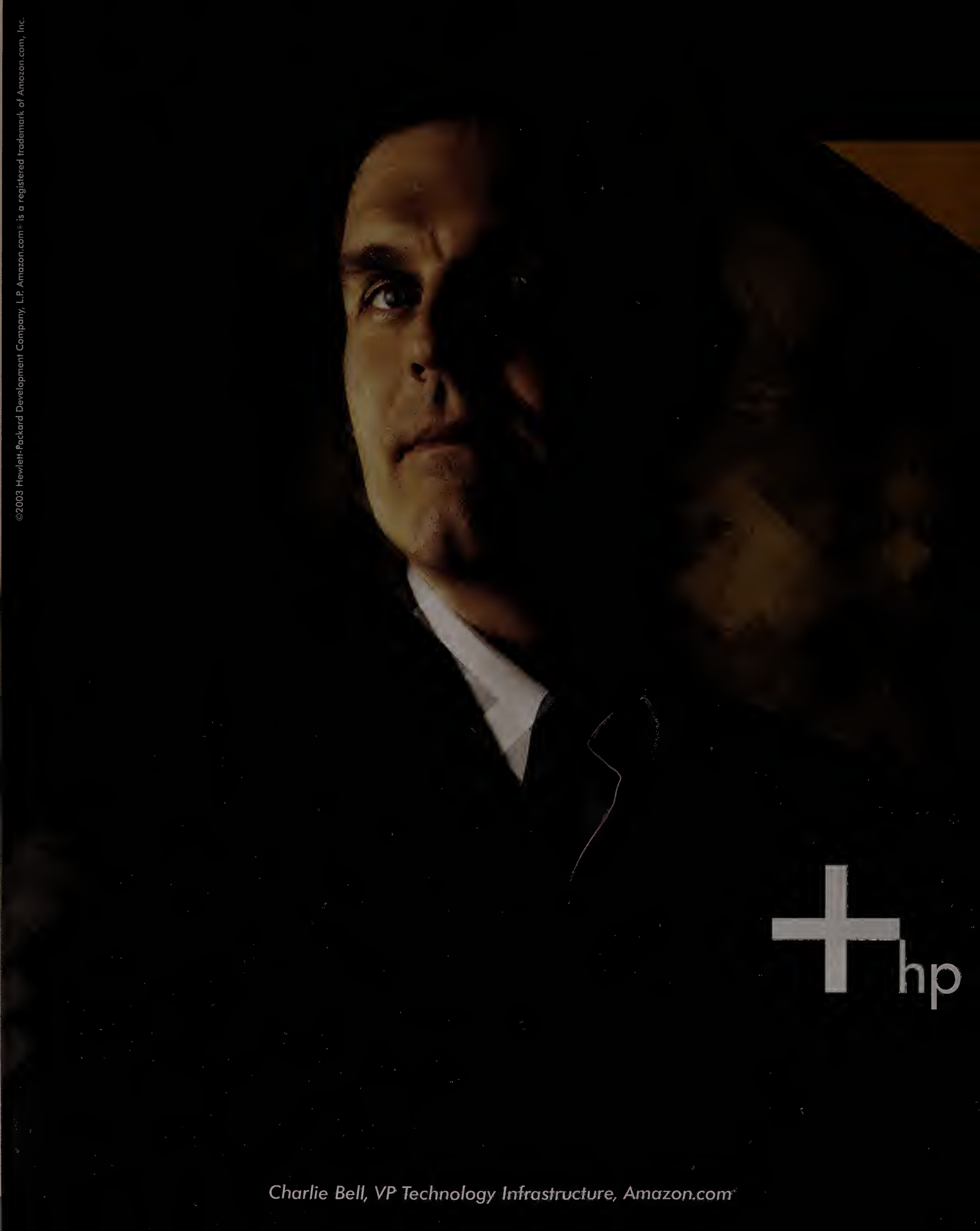
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Michael Schrage | Making IT Work

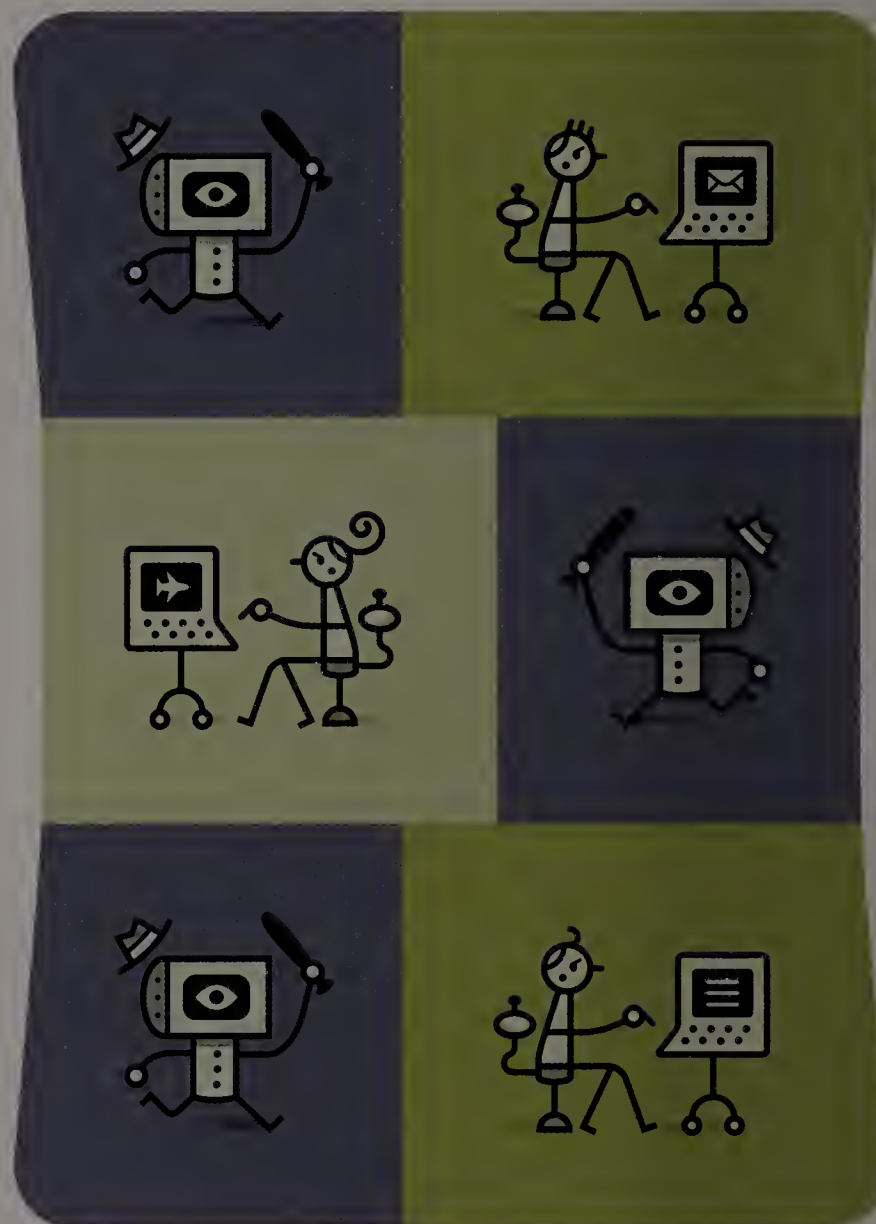
It's All About the Execution

Big Brother

IT systems are too often used to monitor and punish rather than recognize and reward

A RECENT MAINSTREAM business publication had a nifty piece about how cost-conscious companies now aggressively use computerized travel booking services to make sure their road warriors fly coach and don't surreptitiously upgrade their budget hotel rooms from double beds to suites. One proud CIO boasts that his travel and expense auditing software saves his professional services company bundles. Hurrah.

This bean counter's bonanza ties in quite neatly with yet another powerful IT trend in the "surveillance economy" that CIOs now oversee: the use of expert systems and scoring algorithms to scan expense reports for all those hidden vicuna coats, covert bottles of Veuve Clicquot champagne and Vegas-based blackjack bets. With more and more corporate transactions going network, a company's ability to cheaply and thoroughly audit itself leaps by orders of magnitude. As team players, CIOs are ready, willing and able to work with internal auditors to craft "exceptions spotting" software and collaborate with those department heads looking for easy ways to flag inappropriate or wasteful financial behavior. The sheer lethargic lousiness of the economy makes CIOs compelling partners for any and all



executives who declare themselves cost conscious.

Nothing wrong with that. Organizations are absolutely entitled to manage their expenses as they see fit. They're even free to assume their employees are all thieves until proven otherwise. If verification is more cost-effective than trust, then go where you get the most bang for your buck. That's the American way, no?

Those bottom-line behaviors aren't irrational. I'm even comfortable with the assertion that real-time cash management surveillance is essential to running a business well. But what's so appalling about this proliferation of auditing apps is that they're all about sticks. Sure, we can craft networks that can catch embezzlers, moochers and travel policy violators but what about apps that are as much designed to reward as to punish? Where are the carrots?

This is not a plea for corporate compassion. Rather, it is

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a request for CIOs and their colleagues to recognize reality instead of treating it like a marginal nuisance. There's an undeniable logic in the idea that we should turn intranets into dragnets. And yes, we are fools to ignore the value of networks as tools to enhance and ensure compliance in the corporation.

However, we are both fools and knaves if we invest the bulk of our ingenuity figuring out better ways to pound nails into our sticks at the cost of figuring out creative ways to plant carrots. We betray our understanding and respect for human

We betray our understanding and respect for human nature by not coming up with as many ways to reward our employees as we do ways to trap them.

nature by not coming up with as many ways to reward our people for clever use of the networks as we do ways to trap them. I think CIOs are guilty of taking the path of least resistance here. They leap to pluck the low-hanging fruit while ignoring equally inexpensive opportunities to make employees feel empowered and productive.

That's awful. I personally know one midsize company phasing in an audits package for its salespeople even as it has deferred development of its "benefits notification" website and e-mail service. What kind of message do you think that sends? The company's CIO tells me that he's merely reflecting the CEO's priorities. That's hardly a profile in courage. I think it's a betrayal of trust. Where's the balance? It would be one thing if a benefits site cost a fortune to implement and maintain. It doesn't. Even the appearance of balance is sacrificed. That's a false economy.

One Fortune 500 organization uses its network to deliberately make it more time-consuming for its employees to fill out the e-forms necessary to get reimbursed. What once took

15 or 20 minutes online now takes a minimum of a half hour plus a manager's digital signature. Here's the kicker: Reimbursements over a certain amount now take 30 days instead of 14. If a department's expenses exceed an undisclosed limit, accounting has been instructed to postpone a portion of the payables to the next cycle. All those

changes have been designed and implemented in concert with IT. The CIO is being a team player. He can *prove* his IT people are boosting the company's cash flow. Hurrah.

Yes, the company's employees are sullen. But, hey, at least they've got jobs. Then again, their desire to collaborate with IT on various projects has declined. The CIO is seen more as the CFO's enforcer rather than someone who invests in improving workplace productivity. That's not good.

If CIOs truly care about the ongoing challenges of implementing positive change in their organizations—as opposed to merely empowering the legion of cost-cutters—they had better be seen as doing far more than implementing technical tattletales. Portfolio management means striking a balance between using networks to tighten financial control and using them to expand productive employee opportunities.

So just where are those CIOs who publicly reward the best and fastest response to an enterprise-wide e-mail cry for IT help and customer support? Which companies pay a bonus to the employee whose PowerPoint presentation is downloaded and used the most? Which intrapreneurs get rewarded for citing the works of others online? Which organizations are creating internal economies where knowledge sharing and personal introductions via e-mail get compensated in cold hard computational cash or credit? Are CIOs challenging their CEOs and CFOs to be a smidgen more creative about the value of their intranets?

Those aren't rhetorical questions. They reflect a corporate sensibility that is being sacrificed by too many executives in their rush to bring Orwell's 1984 into 2004. They want value-added sticks. Shame on them. They're mismanaging their IT portfolios. They're undermining the alliances that will make future implementations go more smoothly rather than face resistance.

Our intranets—our ERPs and supply chains—are way overinvested in surveillance and punishment, and woefully underinvested in incentives and rewards. That asymmetry will ultimately cost more money than it can ever save if we don't respect the reality that human beings need networks that provide both. Organizations that don't consciously seek to build a better balance are managed by "leaders" who will richly deserve the contempt they inspire. Don't be one of them. Don't let your CEO or CFO become one of them either. **CIO**

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PHOTO BY JOHN SOARES

cio.com Michael Schrage thinks that CIOs are too often guilty of taking the path of least resistance when it comes to using software to punish employees instead of motivating them. What do you think? Have you used auditing technology as a carrot or as a stick? Go to the **ADD A COMMENT** box on the online version of "Making IT Work." Find the link at www.cio.com.



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ROI's Secret Ingredient

Numbers aren't everything. Don't underestimate the importance of weaving a good story into your business case.

GOOD BUSINESS CASES are calculated based on numbers, but they are approved based on stories. My favorite example is the business case created for a notoriously penny-pinching founder and chairman of a billion-dollar services company. All the numbers shouted savings. But what sold the aging chairman was the CFO's pitch that spending money on better human resources systems would return his faltering firm to its former glory.

ROI numbers, no matter how compelling, won't speak for themselves. It's up to you to explain what they mean to enterprise visions and goals. Sure, the new inventory system will provide a 110 percent ROI by helping to control warehouse costs and boost production efficiency. But what the CEO really wants to hear is that it will make the company a more irresistible supplier to key accounts.

Clever storytelling is one of the quickest and most effective ways to gain executive understanding, buy-in and funding. It also helps attract support and cooperation from reluctant users during project implementation and operation. Vivid stories translate dry, abstract numbers into compelling pictures of how deep yearnings of decision influencers can come true. Creat-



ing effective stories is not hard, provided we clearly understand who these decision influencers are, know well what they most care about and understand where to place stories for the most impact. I've outlined below some tips for doing just that.

Three Principles of Storytelling Success

1. Know your audience. Decision influencers are humans first and businesspeople second. Like you and me, they care about personal success, have egos, ambitions, anxieties and fears. You may well know your CEO and CFO, but how well do you understand the concerns of the heads of marketing, manufacturing or customer service? Only when we truly understand all of our stakeholders can we be assured that stories we develop are ones they will relate to when it comes time for making the business case. When investigating whose hearts to

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Tips for Developing Compelling ROI Stories

Build stories around compelling subjects. Universally powerful subjects include: achieving rewards, avoiding major losses, gaining respect, strengthening security, reducing risk.

Use a story to translate the main investment payoffs into favorite senior exec initiatives. If your business case argues for expanded Web services for improving customer support and your CEO is adamant about increasing profits, make your story about how happier customers can also reduce sales, marketing and support costs.

Use familiar situations. For instance, good ROI stories for a forest products company likely involve forests, logs and lumber.

Use vivid language. If promoting competitive advantage, consider words like conquer, crush or triumph. If urgency is the driver, speak of pressure, speed, stress or vitality.

Keep it truthful. Make sure any facts or quotes you use are accurate. If describing future situations, make it clear that they are projections.

Be succinct. Stories command attention only when they quickly make their point. Try to keep individual stories to fewer than 100 words.

Stay alert for story ideas. Hang out at physical and virtual water coolers where stories get told. Interview influential clients and important suppliers. Store up stories for later use.

Study good storytelling in action. Keep your ears tuned for natural storytellers in your company. Salespeople, marketers and public relations people often fit this mold.

touch and how, you should find out the names, ranks and serial numbers of these decision influencers, as well as what they are feeling and what drives their actions. Many such insights are often easily available via personal or published interviews, annual reports and industry analyst critiques. Another source of input: Get to know the people who know them.

2. Hide the technical details. Instead, focus ROI stories on why an investment choice is good. That's where the excitement and emotion lie. Leave the how side of the equation to other parts of

the business case. For example, the real story of a CRM business case could come down to the increased chance of the company winning a coveted industry award related to growth in both sales and client satisfaction. Even though this major opportunity may be entirely dependent on usage of a SuperGizmo Relational database within the CRM system, that fact is not allowed to dilute the impact of the story about industry award-winning opportunities.

3. Develop a compelling story to sell your message. The best ROI stories vividly convey the main theme of the business case in a memorable way. For example, in a business case for justifying a global, intranet-based product design knowledge base, the story used in the executive summary was simply a quote from the CEO of a key client: "I prefer doing business with you, but I won't accept late, second-rate product designs. Get me better, new products faster and we'll double our business with you." For decision-makers accustomed to jumping whenever this crucial buyer had something to say, the whole business case boiled down to this vivid, emotional human message. The executives got the picture, and the funding was approved.

By the way, stories don't have to be written to be effective. One business case creator used a simple prop during an after-dinner speech to get approval for the biggest database project his \$20 million consultancy ever launched. His plea for project approval included a mock-up of a future, fictitious *Fortune* magazine cover highlighting the grinning faces of the executive decision-makers. This database investment, he exclaimed, had such power for the company that it would be the springboard for global success. Suddenly thrusting the magazine mock-up above his head, he proclaimed, "Look at this future *Fortune* magazine cover story: 'Visionary Execs Hit Global Home Run.'" While everyone laughed at this obvious appeal to pride and ego, the funding was approved. Years later, long after the details of the ROI analysis had faded away, the pretend *Fortune* cover was still fondly recalled.

All of us have deep desires and concerns that drive our behavior. Good ROI stories know this and speak accordingly. For more eye-opening examples of business storytelling, check out the website for a conference called "Storytelling: Passport to the 21st Century" (www.creatingthe21stcentury.org).

And for some storytelling tips I've found helpful, see, "Tips for Developing Compelling ROI Stories," this page. Good storytelling speeds understanding, retention and buy-in. That's a great payoff from just a few little words. **CIO**

Jack Keen is founder and president of The Deciding Factor (www.decidingfactor.com) and coauthor of *Making Technology Investments Profitable: ROI Road Map to Better Business Cases*. He can be reached at jack_keen@compuserve.com.





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Michele Hudnall is recognized as an authority in the business of IT operations, enterprise service management, management technologies and sourcing. Michele is ITIL-certified and holds a BBA in business management from James Madison University.

UNISYS PRESENTS ask THE EXPERT

*A few minutes with Michele Hudnall,
Senior Research Analyst,
Meta Group*

Service Desk Outsourcing

> What are the typical services delivered through a "Service Desk?" How is it different from a Help Desk?

I consider a Help Desk more of a dispatch center where employees take calls reactively as problems occur. They may have some limited capabilities to resolve problems, but Help Desk staff are generally limited to taking calls about some IT-related error and passing the information forward. In contrast, a full Service Desk receives calls from multiple methods (voice, electronic/web) and takes calls on a variety of things, such as telecom and service requests that go beyond the standard "how to" support, as well as IT-related problems. Service Desk staff are also more skilled and more empowered at problem resolutions, so they can handle things on the first call more frequently.

> What are enterprises really looking for by outsourcing their Service Desk—cost saving or increased quality of service? Are their expectations typically met?

There are two facets here. The folks looking for only cost savings are generally outsourcing a Help Desk, not a Service Desk. Ironically, such companies don't usually realize the hard cost savings they want because they fail to manage the transition and monitor the outsourcer to make sure that costs remain flat or decline.

Conversely, companies that treat their Service Desks more strategically are interested in outsourcing as a method of tapping into the best practices of folks who do this for a living. They're interested in the soft savings to be realized by outsourcing like looking at the types of requests that are being made in order to prevent or eliminate such calls in the future, thus increasing productivity.

> What factors must be considered when comparing insourcing versus outsourcing Service Desk functions?

For companies considering outsourcing a Service Desk, it's critical that they benchmark their current level of service—as well as current costs—before they start an engagement. Otherwise, there's nothing to compare the outsourcer's service with. Other things to consider: The outsourcer's breadth of service offering, geographical coverage and experience level at delivering consistent, defined processes.

> When evaluating sourcing options, what are the key areas of tangible and intangible costs that must be considered?

Generally, the key indicator to consider is cost per call, because it encompasses a variety of costs, both tangible and intangible. By watching how costs per call trend over time and comparing them with Service Desk hiring patterns as well as desk activity, companies can draw a number of conclusions. For example, the biggest cost for any Help or Service Desk is people, and the challenge is to provide consistent services while keeping that cost flat. Consequently, many companies introduce automated technologies for routine services that increase efficiencies. This should be reflected in a lower cost per call.

"The Service Desk is helping the CIO make better choices."

> Service Desk is often viewed as a commodity service by the lines of business in an enterprise. Is the Service Desk actually strategic?

If a company's Service Desk is really a Help Desk, the perception is correct, but there are strategic uses of Service Desks as well. For example, if you take the wealth of data generated by a Service Desk and use it as a tool to better manage the IT organization and infrastructure, that's strategic. For example, a company who learns from their service desk data that operating problems occur as a result of an existing process, can benefit from learning what in that process should be re-engineered in that process to eliminate those concerns. The Service Desk is helping the CIO make better choices. It's strategic when you can take the data and use it to better manage the human resources in IT as well.

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Sue Unger, CIO of DaimlerChrysler, is working hard to show that the Crossfire (above) is not the only thing of value to emerge from the two companies' 1998 marriage.

DRIVING LESSONS

Sue Unger defied the odds to become the CIO of an automotive giant despite her gender and status as a technology outsider. Here's how she did it.

BY CHRISTOPHER KOCH

SUE UNGER did not have much respect for IT when she was a finance executive. Reactive, insular, tactical and unmotivated are just some of the more printable adjectives she used to criticize IT in those days.

Yet now the 54-year-old former bean counter presides over one of the world's largest IT groups at one of the world's largest companies, \$157 billion DaimlerChrysler. She has survived two waves of management purges since Germany's Daimler-Benz purchased Chrysler in 1998—purges that saw the only other two female senior vice presidents

there leave the company. Indeed, Unger has gained power since the merger in a company that has swept away Americans at its uppermost levels and replaced them with Germans. She is the rare American who rules on both sides of the Atlantic. But she speaks no German, has always lived in the suburban Detroit town where she grew up and has worked for exactly one company since graduating college in 1972: Chrysler. Worldly she is not. And her understanding of IT remains rooted in the conceptual rather than the technological.

Reader ROI

- ▶ How a former bean counter earned the respect of the IT group and became its boss
- ▶ Why many consider Sue Unger to be a walking case study for leadership
- ▶ What challenges lie ahead for the CIO of DaimlerChrysler and her company

This is atypical to say the least. The vast majority of CIOs remain techies who learn the business rather than businesspeople who learn technology. CIO's "State of the CIO 2003" survey found, for example, that just 14 percent of more than 500 IT leaders had any relevant experience in finance before becoming CIO. Other core business functions, like manufacturing and sales, had even lower percentages, while engineering was slightly better, at 20 percent. In the auto industry, the breakdown is no different. The last businessman to be CIO at a Big Three

company, Ford's Jim Yost, who came from finance like Unger, lasted just a year before stepping aside for a techie. It should come as no surprise that Unger is also the first and only woman to be a Big Three CIO.

Unger's startling success makes her a walking case study on leadership and what it takes for a woman and a technology outsider to become the boss of IT in one of the most competitive, macho industries in the world. How has she defied the odds? Several ways: excellent analytical and people skills honed by her years in finance, and a determination

to learn every important aspect of the car business by taking assignments in every major area of Chrysler.

"She broke a lot of barriers by moving around a lot and not being afraid to take on assignments in different functional areas of the company," says Unger's mentor, Gary Valade, Chrysler's executive vice president of global procurement and supply. "No matter what the assignment was, she was always able to break it down to its essential elements and deal with those, and not get distracted by a lot of peripheral stuff."

But for Unger and her company, the biggest challenges may lie ahead. Chrysler, perennially third behind GM and Ford, is continuing to lose market share as competitors eat away at the categories that Chrysler's innovative designers made famous, such as the minivan and SUV. And Mercedes and Chrysler finished below average on J.D. Power and Associates' 2003 initial quality survey. (In 2003 tests, *Consumer Reports'* readers put Mercedes' reliability in third place of worst-of-all car brands.) Analysts question whether DaimlerChrysler's quest to shore up a failing Chrysler has caused its chairman of the board of management, Jurgen Schrempp, to lose sight of what made his German gem great.

Indeed, one of the first questions a German journalist asked Schrempp at the company's annual press conference last fall was whether he was considering selling Chrysler. Schrempp responded with a stern "No!" but the question—and larger issue of the merger's success—lingers on.

Driver's Ed

Unger comes from the second most powerful constituency in the car business: the money guys (and at the highest levels, they are still nearly all guys). The car guys (usually engineers) are the most powerful group, and they usually get the CEO jobs, but when you veer off the road into a financial ditch as often as the auto industry does, the money guys are as powerful as bean counters get. Finance in the auto industry has a breadth and depth

DAIMLERCHRYSLER CIO Sue Unger



The Dossier

Age: 54

Birthplace: Grosse Point, Mich., a suburb of Detroit

Family: Husband Tim, a retired advertising executive who handled the Chrysler account; a daughter, Lisa, 23, a business consultant; and a son, Michael, 15

Education: BA, Michigan State University (economics); MBA, Wayne State University (finance)

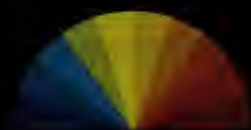
First leadership challenge: While sailing with her family in Saginaw Bay when she was 18, a sudden squall sent 5-foot waves crashing against the small boat. The only ones not seasick were Unger and her father, who told Unger to steer the ship through the storm while he kept an eye on the family. She got the ship back to port unscathed. "That was a big storm," recalls Unger. "There were boats our size that sank that day."

Biggest ROI technology project at DaimlerChrysler: The "digital factory," which applies the same virtual online concepts used to design cars to the design of new and repurposed factories and manufacturing processes. Designers can build virtual assembly lines and see if they fit into digitized versions of old and new Mercedes and Chrysler assembly plants. Digital humans twist and turn to perform their assembly line duties while the software evaluates their productivity and stress—the way Unger used to do with a clipboard at the Jefferson North Assembly Plant. "This is going to save us billions," Unger enthuses. "It's about putting the end-to-end process of building a car online." Some pieces of the process, such as assembly planning and factory simulation, are already online. The system will be finished in 2005.

—C.K.



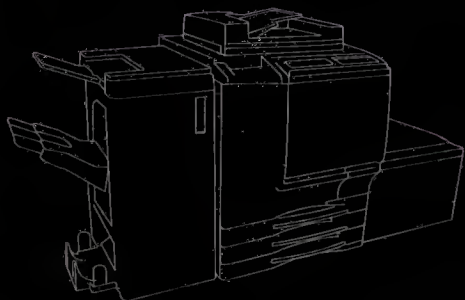
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that few other industries can match. For decades, Chrysler's promising finance people have been rotated through different areas of the company at roughly two-year intervals, creating executives who understand every facet of the business.

Unger served in several functional areas, from sales and marketing to engineering to warranty, before assuming her IT role. But adaptability was a strength long before she ever came to Chrysler. Growing up, she had wanted to be a civil engineer like her father and grandfather. Her parents helped build her confidence by giving her lots of household responsibility and treating her the same as her brother. "My father expected no more or less of me because I was a girl," she says. But he did not encourage her dream. "He said I could do [engineering], but that I wouldn't advance very far and I'd be treated badly," Unger recalls. "Women did one of three things in those days. They became nurses, teachers, or they got married."

In her first college computer engineering course in 1968, Unger, the only woman out of 400, was repeatedly humiliated in front of the class by her male professor. The experience drove her out of engineering and into the business school, where the humiliation was less severe and she was still the only woman in most of her classes.

Her sense of isolation continued at Chrysler, where she was one of three women management trainees in 1972's crop of 50. There were no women in Chrysler's management at the time either. But Unger viewed the challenge at Chrysler, perhaps a bit naively, as a game she could win.

The game quickly got serious. After a few years of working for finance in the sales and marketing function, Unger pushed to be assigned to the Jefferson North Assembly Plant, one of Chrysler's oldest, in downtown Detroit in 1977. Her colleagues in finance thought she was crazy to leave the padded carpet of headquarters for the grease and oil of the assembly plant. But Unger wanted to know how cars were built. "I thought it was important to learn everything about the auto industry," she recalls.



SUE UNGER'S Seven Survival Tips

- 1. Learn more about the business than anyone else.**
- 2. Get yourself a mentor—the higher up the better.**
- 3. Don't let the old boy network get you down.**
- 4. Don't pretend to know more about technology than your techies.**
- 5. Make sure your staff learns more about the business than anyone else.**
- 6. Develop a reputation for integrity—you call 'em like you see 'em.**
- 7. Make sure the IT staff reports to you—no dotted lines here.**

But no management woman had ever set foot in the plant (though women worked on the assembly line), and the plant manager was determined to keep it that way.

It took a year of lobbying before Unger got her assignment. Then, she got stuck in "body in white," the section of the plant where, in the days before automated assembly, the biggest, toughest guys muscled the raw, unpainted (hence body in white) panels of sheet metal into place to create the vehicle's skeleton. Unger's job was to monitor productivity and help improve the assembly process by meeting with the assembly team and discussing better ways to move materials to the line. Ironically, Unger had an easier time dealing with the tough guys on the line than the managers in the office.

"It wasn't discrimination so much as they were very worried about having such a refined young lady in such a macho manufacturing environment, and what if someone swore at me—how would I react?!" she says, laughing at the memory. In fact, Unger didn't care about the swearing—it was the men's phony, condescending sensitivity that drove her crazy. "In meetings, they'd say, 'I'm sorry to do this in front of a lady, Sue, but expletive, expletive,'" she laughs. "I finally said, 'Look, I've heard all this before. What's humiliating is how you single me out before you say it!'"

The people down on the line didn't pull

any punches with her, Unger says. "I loved the honesty," she recalls. "Nobody was afraid to say how they felt about things. I just thrive in an environment like that."

Unger's higher-ups in finance were admiring the same traits in her—not simply because they're signs of good character, but because they serve the company's goals. "In finance, it's easy to become aligned with someone that you like or who you think is doing good work or has got a great future," Valade says. "And it's very easy to take an analysis—say whether to keep a manufacturing plant open or closed—and tailor it to the direction you think the guys or gals would like to see it come out. But to succeed in finance you have to get by that. You have to say, 'It's my job to put down the facts as I see them fairly. Not all finance people can do that. Sue has always been able to do it. You could call it integrity.'"

Managers at Jefferson North had a hard time noticing Unger's integrity, however. They were more focused on her sex. The year Unger arrived there, the managers decided to cancel the annual management picnic rather than invite her. Similar roadblocks would follow, but Unger approached them with humor and a bit of cunning. For instance, when Unger came to procurement and supply in 1983, a Chrysler manager,

Tom Martin, badgered Unger to manage the group's softball team, knowing she had no knowledge of or interest in the sport. Unger agreed. But when she showed up at the first game and handed out the team uniforms, Martin got a surprise. The uniforms were bright pink and white, with the name "Martinetts" scrawled across the front.

A New Word for IT: Yes

Perhaps the toughest assignment for Unger was when Lee Iacocca trumped the other Big Three during the "warranty wars" of the mid-1980s by upping the coverage to seven years or 70,000 miles. Unger was the finance manager who had to figure out whether Chrysler would lose what was left of its tattered shirt on warranty repairs. This was an assignment Unger didn't choose her-

the quality problems much quicker. Her naïveté about technology may have been a blessing in disguise. "IT said it was impossible to put this much information in a database, much less analyze it," Unger recalls. "So I got a PowerPoint presentation together and said, 'This is what I want.'"

She was asking a lot. Not only did the database need to store vast quantities of information, but Unger herself specced out complex statistical analyses, which required vast amounts of computing power to generate comparative quality reports. As she recounts the story in her big corner office at Chrysler's headquarters, her annoyance is still fresh. Her foot starts to jiggle with nervous energy.

It's easy to imagine that foot kicking poor Paul Hsu out of her office—three times, to be exact. Hsu was the IT messenger assigned to tell Unger that her database could not be built. "With all the suppliers out there, you

IT's Ambassador

Unger had built a reputation for fixing problem financial processes and repairing bad relationships with business partners, but she had never fixed those problems with IT before. She thought fixing IT's image might be her biggest challenge yet. So when the department's top job opened up in 1993, she applied for and got it.

When Unger arrived, she became IT's front end, its CRM system. In many of the areas where IT built systems—from the shop floor to the showroom—Unger had direct managerial experience, process knowledge and, perhaps most important, contacts. "You can't underestimate the advantage of knowing people in the various organizations," says Valade. "So if you've worked inside the Jefferson plant, you can call the controller and supervisor



So far, Sue Unger's only global infrastructure win has been e-mail—down to a single system from 16.

self. Warranty and quality were chaotic backwaters. Engineers used dollies to deliver the stacks of paper that quality analysts needed to pore through to generate their monthly quality reports. "The paper was stacked so high you couldn't even see the analysts at their desks," Unger recalls.

She realized then that she had stumbled on a function that could really benefit from IT. Except there was no IT to depend on.

By law, Chrysler has to keep warranty and quality information on every part and every vehicle going back 15 years. But getting at the information about a part that failed last week was as difficult as finding one that blew up 10 years ago. Unger realized that if warranty and quality data went online, the engineers would be able to fix

can't tell me there isn't someone who has tackled this problem," Unger recalls telling him. "Go figure it out. That's what I'm paying you guys for."

After IT told Hsu to tell Unger no for the fourth time, he declined the assignment. Instead, Hsu called IBM and pleaded for help. "And that's when they told him about the new database they were developing," Unger recalls.

Eighteen months later, they had the database installed. Instead of a handful of quality analysts looking at mountains of paper, the new database opened the information up to all of Chrysler's engineers, as well as those at key suppliers. Quality problems were resolved 75 percent faster, according to Unger, with an overall cost reduction of 25 percent.

and just talk to them because you know what their business issues are. You've been there. You realize how everything fits together. If someone calls up and says they need something in 24 hours, you know whether they really need it in 24 hours."

IT managers were in awe of Unger's access. "They'd say, 'You mean we're going to meet with so-and-so? We've never spoken with him before,'" she laughs.

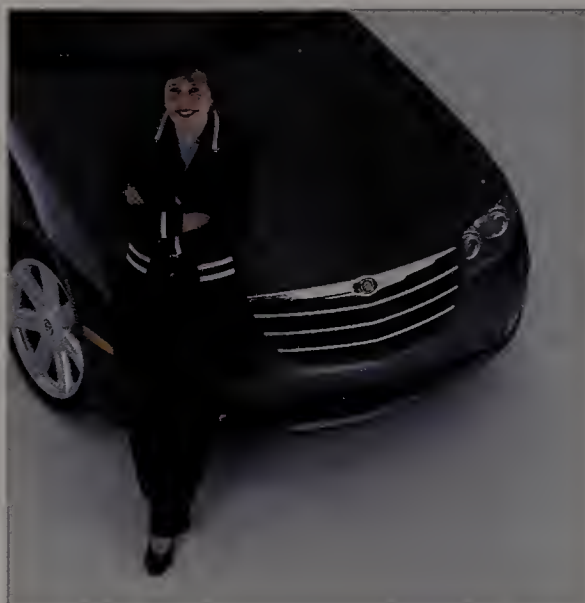
What Unger did not have was a solid grounding in technology. For any nontechnology CIO, this gap in understanding can create a gulf of resentment with the techies in the group—especially those who dream of being CIO one day. Asserting her leadership without alienating her technology lieutenants is the tightrope Unger has

walked since taking over IT at Chrysler. She maintains her balance by meeting the techies halfway. They provide her with advice and manage direct relationships with their business customers while she focuses on overseeing the overall strategy, maintaining relations with top management and building metrics for managing the overall IT group.

"Her finance background gives her the ability to see technology from a business payback view, which is absolutely necessary not only for her success but our success as a company," says one of her lieutenants, CTO Vince Morrotti. She is also famously impatient with the progress of projects. "It can be a challenge for her staff, but it allows them to accomplish more than they may have thought was possible," he says.

Merger Mania

In 1998, the possible was stretched to span the Atlantic. Daimler's acquisition of Chrysler brought together two IT departments that could not have been more different. Chrysler's single market emphasis—mass-market cars and pickups—along with



fact the biggest difference was the culture of the companies themselves. Mercedes is all about luxury and consistency while Chrysler has rarely ventured above the middle market and has survived by being idiosyncratic—throwing out designs every few years and carving out new categories like the minivan and SUV.

Supporters of the merger call the two companies complementary, for their different market emphasis and styles, but critics say there is little opportunity for the two companies to save costs because they lack common ground. It has taken five years for

man Schrempp wanted to see across the company. So in 1998, Unger got the nod for the top job. And there was immediate resistance to her vision, mostly from the German side, which was highly decentralized and heavily outsourced. "The Daimler IT organization was a bunch of contract managers managing contracts with IT outsourcers," says AMR Research Director Kevin Prouty.

But Unger quickly demonstrated that she was willing to delegate technology leadership on projects to her German lieutenants, just as she had done in the United States. For example, technology projects running at Mercedes before she took over were left in the hands of the German technologists on the condition that they cooperate with their American colleagues to bring them to Chrysler, if the applications didn't already exist here. She insisted that IT be run globally in just one area, infrastructure, which is owned by Morrotti, an American who used to be CIO of Mercedes-Benz USA.

So far, the only global infrastructure win has been e-mail: down to a single system from 16. Morrotti faces a much more difficult challenge in trying to standardize infra-



Sue Unger continues to face resistance from Germany in her efforts to consolidate infrastructure and apps.

its constant financial hardships and heavy geographic concentration in the Detroit area generated an emphasis on IT centralization and standardization. Daimler, on the other hand, was a highly distributed, multinational company with a number of different business units serving very distinct markets. Those units all had their own IT leaders and, in more typical European style, no overall chief. Each unit was free to do as it wished.

The press focused on nationality conflicts after the acquisition was announced, but in

a truly codeveloped product, the Crossfire sports car, to emerge. It combines one of Chrysler's typically radical, love-it-or-loathe-it designs with Daimler's more refined hardware under the hood. But the car, with its high price tag—\$34,495 for a six-speed manual—and limited production run, is more a symbol of cooperation than a demonstration of value that has resulted from combining the two companies.

Even so, Unger's success in centralizing Chrysler IT was a template for what Chair-

structure across the oceans—not just the Atlantic but the Pacific too, as the combined company is in 200 countries. He is creating four central data centers around the world to serve both companies, which will help eliminate some redundancy. But the heavily localized infrastructure of Daimler-Benz—each plant has its own regional data center—is simply too difficult a nut to crack, for now.

In the meantime, Unger has focused most of her globalization effort not on sys-



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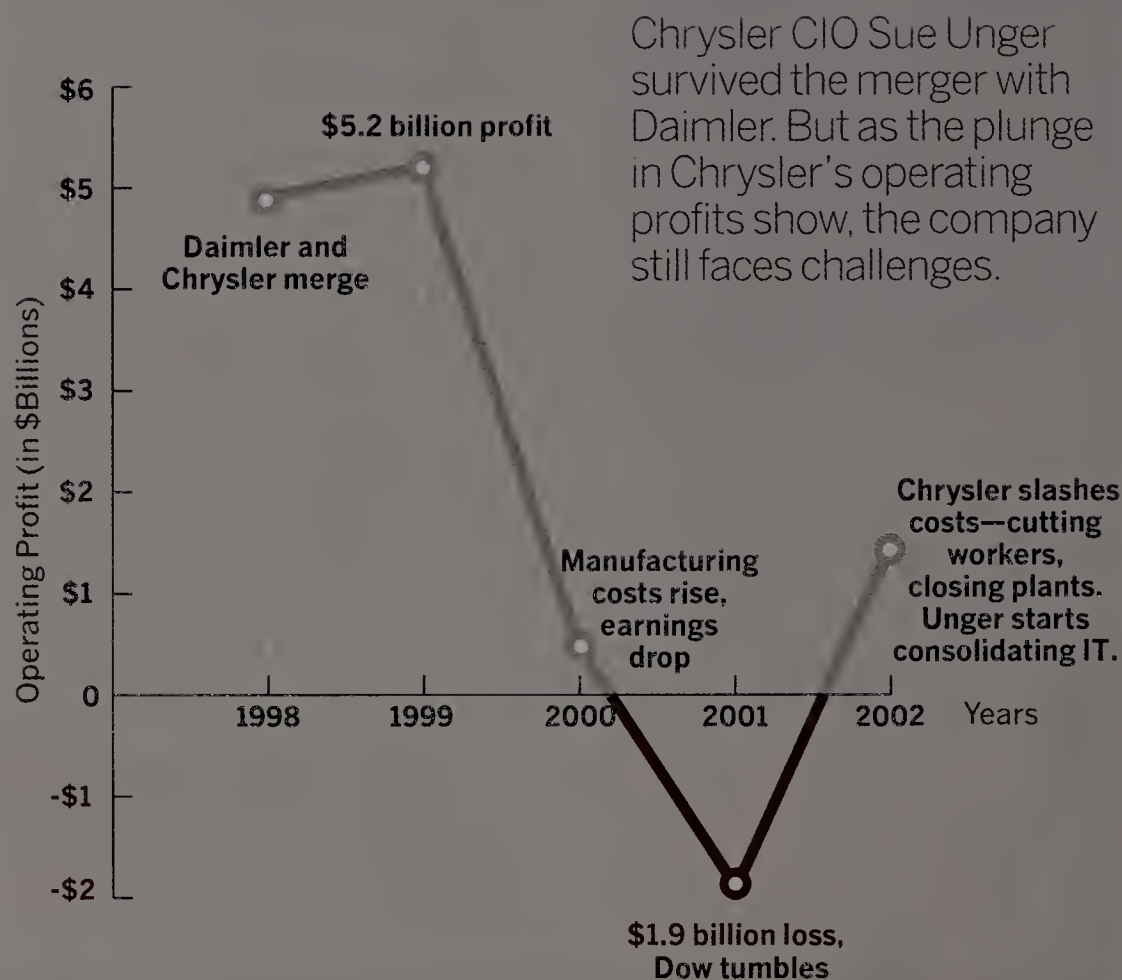


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Pulling Out of the Breakdown Lane



tems but on people. She built a standard performance measurement system for both sides of the Atlantic based on the popular Balanced Scorecard concept. She instituted a global awards program to recognize individual achievement, another move that ran counter to the German tradition of focusing on group recognition. And in the most controversial move of all, Unger demanded that 20 percent of her entire staff rotate inside or outside of IT each year. But Mercedes' IT had a long history of specialization and resisted. In the end, Unger and the Germans compromised and agreed to rotate 18 percent of the global staff each year.

Unger acknowledges that it has been grindingly difficult bringing both sides together, but her people skills and experience have proved invaluable. "The fact that she listens to people, evaluates what

they have to say and takes a position that is not political is what got her through it," Valade says.

The Contest Ahead

Sitting with her lieutenants in a conference room at Chrysler's giant corporate center, Unger never lets anyone forget that she is the most experienced businessperson in the room. Partly it's her delivery. She hits the table with her fist, she gets excited and passionate, she laughs (a delightful cackle of a laugh). She can hold the room. Her lieutenants don't have the same polish and command.

She also spends a lot of time cheerleading. Despite spouting enough rah-rah corporate platitudes to make even the most seasoned PR handler blush, Unger sounds

like she really means them. "We have such a great team here in IT!" she chants over and over.

Though Unger likes for her employees to seem like an inseparable part of the groups they serve, she doesn't want her full-time staff—which now numbers 4,400 on both sides of the Atlantic—ever reporting to anyone but her, another legacy of her days in finance. "There always has to be a solid line back to IT," she says. "If you let it become a dotted line, you start to have a division between corporate IT and business unit IT."

Unger's biggest contest may lie ahead. She continues to face resistance from Germany in her efforts to consolidate infrastructure and apps. She spends a grueling two weeks out of every month in Stuttgart trying to influence the man she reports to, Schrempp. He is an intimidating character, an engineer by training. At best, he is described as tough but fair. At worst, he is described as an arrogant bully who lacks faith in Chrysler's American managers. In a tough economy, where Chrysler has lost market share since the merger, Unger has to prove herself each month when she gets on the private corporate plane to go to Stuttgart.

After the merger, Schrempp decreed that three functional areas of the two companies—finance, procurement and supply, and IT—should become truly integrated and global. Valade, who presides over the global procurement and supply effort, says Unger has the most difficult challenge of the three. "The finance people knew they needed one chain of command, and the procurement people quickly recognized that we could save a lot by doing global purchasing," says Valade. "But there is a lot more resistance within IT."

Unger, in other words, has her work cut out for her. But if anyone can do it, her former mentor implies, she can. **CIO**

If you want to lay any bets on Unger's future at DaimlerChrysler, let Executive Editor Christopher Koch know at ckoch@cio.com.

TRENDLABS:

LOS ANGELES

MUNICH

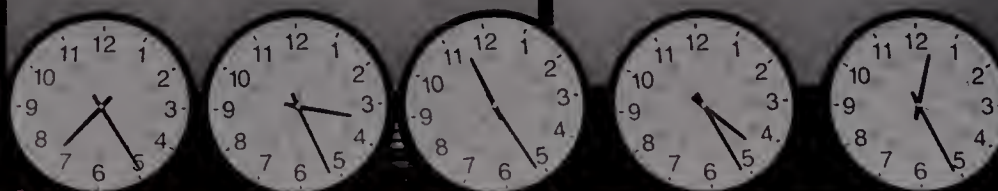
TAIPEI

TOKYO

MANILA

PARIS

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Los Angeles,
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joins a team
of antivirus experts
working worldwide
to uncover data
security answers
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HOW TO KNOW IF E-PROCUREMENT IS RIGHT FOR YOU

While some companies have achieved price reductions through online sourcing, the focus of e-procurement initiatives today is process efficiency. Here's how to decide if, what and how you should buy electronically. BY MALCOLM WHEATLEY

AT ITS PEAK in March 2000, the stock price of e-procurement software vendor Ariba reached \$183. In May 2003, it traded at \$3. Another e-procurement vendor, Commerce One, saw its stock peak even higher—an eye-popping \$330. Its shares, too, have recently become but a shadow of their former glory at just \$2—and that's after a reverse 1-for-10 split in September 2002. Without that, the shares would be trading at 20 cents.

But while the stocks of once-high-flying e-procurement companies have come crashing to earth due to excessive expectations, the dotcom bust and the vagaries of the market, e-procurement itself is quietly booming. Studies by AMR Research show that 17 percent of the companies that don't yet have sourcing and procurement applications plan to implement them in the next year. "This is the highest percentage of any packaged applications category in the market today," says Pierre

Mitchell, vice president of research at AMR. "That is a market growth of 12 percent, up from \$1.7 billion in 2002 to \$1.8 billion in 2003."

Explaining e-procurement's allure isn't difficult. After a rocky start, it's finally delivering the goods. The software has matured; there's a critical mass of suppliers to buy from; internal systems—front and back—are better equipped to deal with e-procurement. The list goes on. Today it's possible to buy almost anything electronically.

Which is not the same as saying that everything *should* be bought electronically. Deciding whether to invest in e-procurement applications—whether or

Reader ROI

- The questions you should ask before deciding on an e-procurement strategy
- The new tools that facilitate online purchasing
- How CIOs have managed their companies' expectations

not your business can benefit from electronic sourcing and purchasing—it turns out, is a much more difficult call. Pens, paper clips and copier paper are one thing. Complex, made-to-order engineered components are quite another.

THE QUESTIONS YOU MUST ASK YOURSELF

E-procurement implementations often simply facilitate the catalog-based buying of indirect materials such as office supplies. The ROI of those implementations is invariably good. Rarely, however, are they earthshaking. Savings on office supplies can only boost a bottom line so far.

Moving beyond this stage—from calendars and Post-its to direct materials (the stuff that goes into your product) and the various services that a company buys, such as consulting, auditing or janitorial services—is hard. If a company makes large purchases of strategically important raw materials or components, it usually does so in multi-million-dollar deals. These are often negotiated over weeks and months, arranging for supplies for up to a year ahead. In such environments, runs the argument, e-procurement adds little value. It may even get in the way.

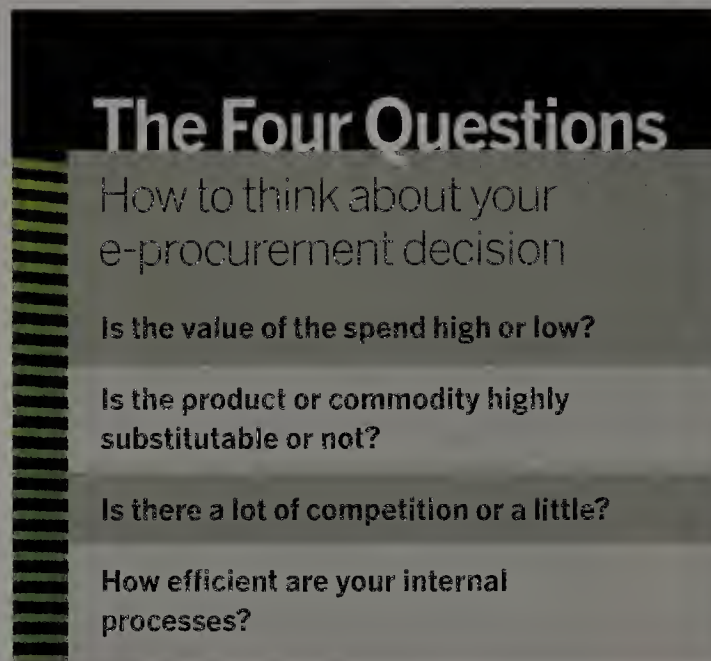
But e-procurement can deliver more than just lower prices. Indeed, the net impact of its other characteristic deliverables—better productivity, faster processing, greater visibility, the elimination of maverick, or unplanned, ad hoc buying—can have a much higher ROI than what can be achieved by shaving a few pennies off price.

“The bottom line [on e-procurement] depends on your company and what it’s buying,” concludes Scott Elliff, president of Capital Consulting and Management.

Elliff suggests that a CIO evaluating the pros and cons of e-procurement ask himself the following questions.

- Is the value of the spend high or low?
- Is the product or commodity highly substitutable or not?
- Is there a lot of competition or a little?
- How efficient are your internal processes?

Rather than rushing to automate for



automation’s sake, those are the sorts of factors that require consideration.

CHOOSING THE E-PROCUREMENT MEAL THAT WORKS FOR YOU

1 Fast Food: Keeping It Simple.

At Applied Industrial Technologies, price negotiation remains in the hands of the product managers in charge of each category. The focus of the company’s e-procurement is on making internal processes more efficient through the paperless processing of orders, receipts and invoices. An internally developed inventory management application gathers requirements from more than 400 Applied service centers across Canada, Mexico, Puerto Rico and the United States, and then sends them to suppliers via EDI.

This isn’t rocket science, but it meets the needs of the \$1.5 billion distributor of industrial components that stocks 2 million different items, including bearings, motors, pumps, valves, couplings and the other highly substitutable building blocks of manufactured products. And those blocks are provided by suppliers competing in an intensely price-sensitive market. Applied CIO Jim Hopper eschews newer technologies like XML in favor of tried-and-trusted EDI because, as he says, EDI “has been around for 20 years, works and is very cheap for us to administer. There’s a ton of people who know EDI intimately but only a handful

who know XML that well.

“We’ll do EDI with anyone that has the capability,” adds Hopper, “and help them to get that capability if they haven’t got it.”

Similarly, Webasto Roof Systems, a \$300 million subsidiary of Germany-based automobile roof and thermo systems manufacturer Webasto AG, has been adopting e-procurement strategies to make its internal process more efficient, while keeping sourcing decisions and price

negotiations offline.

CIO Mike Thibideau credits e-procurement with reducing inventories by 15 percent, generating \$1.5 million of cash flow and reducing annual inventory carrying costs by \$180,000. All that, and the system is still only 30 percent implemented.

Using technology developed by enterprise system vendor QAD, Webasto’s 150 direct material suppliers download all the information they need to know to ship the parts and materials for Webasto’s sunroofs and convertible tops.

“Because all they need is a Web-browser, it’s less intrusive than EDI, and less expensive—especially for the supplier, who doesn’t have to pay anything,” says Thibideau.

Armed with knowledge about future requirements, he explains, it’s much easier for Webasto’s suppliers to fill those requirements just after parts are used and not before, hence the inventory savings. For example, suppliers of items as diverse as glass and electronic control modules can now log on to see how Webasto’s production schedule affects demand for the parts they produce. Suppliers can then compare the inventory Webasto is holding to the

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minimum and maximum levels the company preset, and decide for themselves when to ship a particular part and how much of it to ship.

2 The Full Banquet: E-Everything.

At the other end of the spectrum are businesses, such as Reliant Pharmaceutical, that have gone whole hog, seeking savings from items where compressibility and substitutability make that possible, and settling for internal efficiencies where it isn't.

Reliant decided in 2002 to buy everything electronically—from janitorial supplies to the products that it sells. It's true that the relatively straightforward nature of its business made this easier; the drugs it sells are manufactured by pharmaceutical giants such as Novartis and Lilly, thereby eliminating direct materials as such. Even so, says Reliant CIO Ron Calderone, "100 percent of our purchases now go through Ariba: lodging, travel, office supplies, sales literature, the products we sell, you name it."

Previously, for Reliant to process a typical purchase order required 21 "touches"—approvals, logging, classifying and the like—and took between one and three months to move through the system. It was also difficult to enforce any consistent company purchasing policy, and Reliant's back-office system provided very little procurement information with which to leverage price concessions from suppliers. In the first year of its Ariba implementation, says Calderone, 10 percent of Reliant's purchases were electronic, contributing to an ROI of 65 percent. He estimates the second year ROI will be 400 percent.

3 À la Carte: Picking and Choosing Among E-Procurement Strategies.

Moving to emulate Reliant's comprehensive levels of e-procurement may seem daunting. In fact, it's easier than it first may appear. The traditional distinction between direct materials (those that go into the finished product) and indirect materials (those that don't) often obscures more than it illuminates. More enlightening are those factors that apply to both direct and indi-

rect materials: substitutability (where one widget is as good as another) and compressibility (squeezing suppliers to force them to lower their prices). In short, if you can put it in a catalog and describe it through standard parameters, then you can source it electronically.

Take items such as pumps, motors, switches, electronic components and valves. Those are clearly direct materials, but they also exhibit high levels of substitutability and compressibility. One manufacturer's motor or pump is likely to be very similar to any other one that meets your specifications, and therefore your suppliers are likely to be competing on price.

Bill Lawson, CIO at electronic instrument and motor manufacturer Ametek, reckons that asking Elliff's questions at his company has resulted in an average 20 percent savings. His company now sources 12 commodity groups of substitutable and compressible items (among them machine tooling, electrical supplies and computer hardware) through an Oracle Exchange e-procurement portal. "We

have access to around one and a half million SKUs [inventory items] through catalogs maintained by our suppliers," says Lawson.

Even so, apart from obvious items such as electronic components, bearings and adhesives, which meet the substitutable and compressible criteria, Lawson is leery of embracing e-procurement for direct materials too quickly. The reason? Through direct negotiation, buyers can at present get a better deal, especially when grouping different items together into a single buy. "At the moment, we believe that direct material and components are best handled through relationships between our purchasing people and our suppliers," Lawson says. "The more important the item, the more true that is."

For example, Ametek uses a lot of copper wire—around \$12 million worth a year. Large and carefully negotiated deals with suppliers might embrace many months of supply, right across the couple of dozen or so wire gauge sizes that the company buys. In reality, purchase orders for wire are releases against a prenegotiated contract, at stipulated

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SERVICES COMPOSE A LARGE and growing slice of corporate expenditure—on average a third of total spend, according to research from the Center for Advanced Purchasing Studies. Tim Reed, vice president of product strategy for service procurement software provider Elance, adds, "In some industries, such as entertainment, insurance and finance, it can be a lot higher."

And the management of service procurement is often poor. For example, look at contract labor. "On any given day, ask a Fortune 1000 company how many temporary workers they have, how much they are paying them, what their total spend including fees will be and what accrued expenditure is owed to suppliers, and they won't know," says Elaine Taylor, president of consultancy Taylor-Harris.

Accordingly, says Toby Redshaw, Motorola's corporate vice president of IT strategy, architecture and e-business, the electronics manufacturer intends to e-procure just about every service the company buys—with one exception: benefits.

"As with most companies, benefits have been a big deal at Motorola for over 10 years now, and the area is pretty tightly managed," he says. "We'd be polishing the shine on the silver, rather than adding any value."

—M.W.

prices. That kind of sophisticated agreement requires the personal touch. A catalog-based buy, oriented around a single catalog item, would not allow for the same critical degree of elasticity and would lock Ametek into a potentially disadvantageous spend.

But even here, e-procurement is beginning to encroach on the buyers' preserve of finding and negotiating with suppliers.

"We certainly engage in a lot of Internet activity to locate and qualify suppliers, although I wouldn't necessarily characterize that as e-procurement," Lawson says. "We might even hold an electronic auction. But after that, the transactions would be releases against a contract."

Some companies go even further toward using e-procurement for everything they buy, although again, the objective is often improved efficiencies, leaving sourcing decisions and price negotiations to the experts. At ImagePoint, which designs, manufactures and puts up outdoor signs for retailers such as McDonald's, Pizza Hut and Taco Bell, e-procurement already embraces both direct and indirect material spend but not yet services, says Vice President of Information Services Steve Hammond. Aluminum, steel, fasteners, wood, plastic sheets—everything that goes into constructing ImagePoint's signs has been sourced through software from SupplyWorks since early 2002. Indirect materials—everything else, in fact—utilized the Web-based buying tools supplied by specialist indirect material suppliers, such as Granger, Insight and Staples. The incentive for moving direct materials onto SupplyWorks, explains Hammond, was better productivity in the buying department that allowed buyers to do what they ought to do—buy better, not shuffle paper.

Instead of printing purchase orders then faxing or mailing them to suppliers and then finally chasing the suppliers for order confirmations, ImagePoint's procurement requirements are fed directly from its elderly enterprise system into the SupplyWorks system.

"The time that our purchasing agents used to spend chasing paper is freed up so that

they can now spend more time working and negotiating with existing vendors, and qualifying new ones," says Hammond. "Their jobs used to be transaction-based. Now they are performing a higher value role."

Already, that higher value role is delivering a bottom-line benefit. The company is on track to achieve a 10 percent reduction in its annual purchase spend of \$32 million. It is, points out Hammond, "a very sizeable return on our investment." In addition, the plan is to grow the business by 6 percent to 8 percent this year, but without hiring any more purchasing agents. Previously, the size of the business and the purchasing function pretty much moved in lockstep.

THE NEW TOOLS

E-procurement used to be about dealing with low value, repeatable items that clog up your purchasing func-

tion," says Prasad Hedge, a partner with Denali Consulting. "Over the past couple of years, the tools have started to become more collaborative and not just transactional."

MSX International, an \$800 million business specializing in providing supply chain management and procurement services to the global automotive industry, is using newly available collaborative technology from Commerce One to buy items and services as varied as printer cartridges and contract labor for its automotive customers. The company issues RFPs (accompanied by CAD drawings and specifications), solicits bids and responds to suppliers' requests for additional information—all over the Web.

"It's the electronic equivalent of a bidding conference, using the Web to interact with a greater number of suppliers," says Troy Gazette, director of IT platform strategies for MSX. Answers to suppliers' questions

Why Users Make Poor Buyers

Taking purchasing power away from the amateurs



WITH AN ANNUAL ONLINE SPEND of \$3.2 billion, Motorola is among the global leaders in e-procurement. "The vast majority of the physical goods that we purchase are now bought online," says Toby Redshaw, Motorola's corporate vice president of IT strategy, architecture and e-business.

Now Redshaw is turning his attention to the e-procurement of things other than physical goods—the \$2 billion to \$3 billion Motorola currently spends on services such as consulting, temporary labor, marketing, R&D and cleaning—and the advantages to be gained by professionalizing the procurement process and taking purchasing power away from users.

The key to this last strategy comes from a lesson the company learned from e-procuring physical items: Users make poor buyers.

"We have great storage guys and great networking guys, but that doesn't make them great buyers of storage and networking," says Redshaw. For that, he says, "You need fierce purchasing professionals with piranha and bulldog genes built into their genomes: We call them 'deal sharks.'"

The main boost to operating income, however, will come from securing better prices from service providers and ensuring that both sides stick to a deal, once struck. "You can spend a lot of time negotiating a fantastic global contract with a consulting or accounting firm, only to find that the people on the ground in Brussels or Beijing either don't know about it, or say that they've got a good deal locally that they intend to continue with," says Redshaw.

—M.W.

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can be broadcast to the entire pool of vendors, or not, depending on the automotive customer's own preferences.

Applying optimization technology to procurement is another area that is hotting up,

their part, can evaluate those bonuses. In one sense, it's the answer to Ametek's problem of moving its wire buying online. Instead of forcing bidders to bid for every one of the couple of dozen wire gauges the

straightforward endorsement of the bottom-line benefits of expressive bidding. Last year, the company sought expressive bids for its Nafta ocean-going freight business. "We weren't very confident that we'd see lower



To manage the expectations of an e-procurement effort, it's important to remember that the ROI will come only partly through lower purchasing prices. The rest will come from efficiency improvements within the buying process.

especially with multi-item lots. "Run a buy through an auction, and you might get an 8 percent savings. Run that same buy through an optimization engine, and you'll get another 8 percent," asserts John Fontana, a principal with sourcing and supply chain management company Tigris Consulting.

One of the beauties of optimization, he explains, is that it frees both buyers and sellers from the straitjackets of fixed bundles of goods or services against which bids are solicited. That means that online buyers and sellers can now do something they once couldn't. Sellers can bid for selected parts of lots, or include in their offering nonstandard terms such as volume discounts, extended price validities or other goodies not explicitly covered by the bidding terms. Buyers, for

company uses, bidders can bid to their strengths and sweeten those bids with volume discounts, or fix them for a period of time. It doesn't sound too difficult, but in practice, disentangling the merits of a dozen suppliers' different bids is surprisingly challenging—which is why companies have usually opted to enforce standardization in the first place.

Both Procter & Gamble and Bayer have recently deployed optimization technology from CombineNet that allows suppliers to submit these so-called expressive bids and buyers to evaluate them. The optimization involved, says Dennis Begg, Procter & Gamble's associate director of purchase innovation, "is a combination of linear programming and mixed-integer programming, coupled to a very efficient solver."

(A solver is a piece of software that works out difficult calculations.) Boiled down, for those that can remember Economics 101, it's similar to applying the law of comparative advantage to everyday purchases.

"Auctions are a zero-sum game," explains Begg, "but by allowing suppliers to bid to their own strengths, and squeeze out their own inefficiencies, expressive bidding adds value."

Tom Phalin, director of logistics procurement at Bayer, has a

prices at all," he says. "But in the event, we reduced our ocean freight costs by 15 percent, signing contracts with 11 separate steamship companies." This year, Bayer is repeating the process on a global scale.

THE E-PROCUREMENT FUTURE

Today, both the technology and the buyer's expectations have matured to the point where e-procurement can genuinely be used to source things other than catalog-based indirect goods. Direct materials, and the services that companies buy (see "At Your E-Service," Page 61), are now real options for mainstream businesses—and not just for the few companies whose business models and operations lend themselves to it.

To manage expectations of an e-procurement effort, it's important to remember that the ROI will come only partly through lower purchasing prices. The rest of the return will come from efficiency improvements within the buying process. And the job of moving those improvements from the theoretical to the practical often falls upon the CIO. **CIO**

If you have e-procurement experiences you'd like to share with your peers, you can address them to letters@cio.com. Malcolm Wheatley is a U.K.-based freelancer who writes frequently on enterprise computing initiatives.

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Opportunity Knocks

HOW TO GET THE MOST OUT OF OUTSOURCING



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OUTSOURCING TODAY: MORE OPTIONS THAN EVER BEFORE

Never have there been so many choices.

As we assess all of the outsourcing options mid-way through 2003, we see a broader, deeper menu of choices than ever before in the outsourcing industry's 14 short years. We see selective outsourcing and soup to nuts; onshore, offshore and nearshore vendors; security outsourcing as a strategy, and business process outsourcing as a new way of life.

And as we look beyond what's being outsourced and to whom, we see a smarter set of customers than ever before. They have a better sense of how to get into a good outsourcing deal, as well as how to get out of a bad one.

Of course, some issues don't go away. Vendor selection remains the fundamental issue in outsourcing – "How do I know which is the right vendor to meet my needs?" – and with more options than ever, the decision is that much more complicated. Vendor management is the other big ongoing challenge – "How do I create the right contract/service level agreements/ROI metrics?" We have solid methodologies and tools to meet these goals today, but they don't make vendor management any easier. Outsourcing remains an engagement, and for it to succeed then parties on both sides of the deal have to remain fully engaged.

Sourcing strategies, vendor selection and day-to-day management. These are among the topics featured prominently in this issue of Strategic Directions.

BY TOM FIELD

Strategic Directions is the ongoing series of CIO Magazine supplements, produced by CIO's Custom Publishing group, focusing on the key business-critical technologies and solutions of the day. Through research, analysis, case studies and vendor profiles, Strategic Directions provides an executive-level primer to the hot topics on the minds of senior IT and business leaders. Outsourcing, clearly, is one of today's hottest topics.

Please let us know what you think

– about Strategic Directions in general, this edition in particular, and ideas you'd like us to tackle in future editions. Got any outsourcing best-practices you'd like to share with other IT/business leaders? Send them to me; I'll pass them along in our next issue.

Thanks for reading Strategic Directions. And thanks in advance for writing in with your feedback.

Tom Field

Director of Content Development
CXO Media Custom Publishing
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READER RESPONSE NEW SECURITY AWARENESS GROUP SEEKS MEMBERS

Dear Editor:

I just finished reading your Strategic Directions section in CSO magazine. Over the past few months I have come to the conclusion that the threat of social engineering has increased due to increased focus on systems security (i.e. OS hardening, IDS, etc.). In other words, it may be easier to gather information with a few calls and complain to the help desk that you can't get in through the VPN. The best way to defend against this threat is a solid security awareness program.

A week ago, I created a Yahoo group to discuss security awareness program methodologies and share information security tips (geared towards the user community). I have

attached a few of my posts and included the specifics below. There are over 250 members. Thank you.

Gideon Rasmussen, CISSP
Celebration, FL
glideon@infostruct.net

SECURITY AWARENESS GROUP

The security awareness group provides a forum to discuss awareness methodologies and share information security tips. The group can also be used by anyone interested in learning more about information security.

Information security tips should be written with the average person as the intended audience. In general, tips should advise of best practices and reinforce policy.

To join the group, visit
<http://groups.yahoo.com/group/security-awareness>.

OPPORTUNITY KNOCKS | GET A GRIP

GET A GRIP

HOW TO MAKE SENSE OF YOUR OUTSOURCING OPPORTUNITIES

“Faster time to market, a more linear and predictable cost model than insourcing, and access to a better-trained resource when discreet skill sets are required.” Sound like a dream? Actually, those are three competitive advantages that Keith Morrow, vice president of information systems at convenience retailer 7-Eleven, says outsourcing can deliver.

And then, Morrow adds, there’s “the fact that security, privacy, redundancy, continuity and controls are so important these days. The boardroom

panies spend better than \$100 billion a year on IT outsourcing.

But before leaping to outsourcing in an attempt to solve a potentially sticky business problem, keep in mind that outsourcing is about relationships: “Structuring both the relationship and the type of work included in the outsourcing arrangement is critical to...financial success,” Bullock notes.

MATCHING NEEDS AND SOLUTIONS

In an outsourcing landscape so rich in capability and variety, what you outsource—and why—will determine the kind of vendor you’ll need. To make outsourcing work, CIOs must juggle

areas of our business that are closest to our customers. IT people perform best when they are required to constantly improve and innovate, vs. watching the lights blink.”

At one global pharmaceutical and consumer goods company, laptop repairs used to take three days per mobile user, at the cost of \$2,000 per day, per user. With more than 6,000 representatives nationwide, an outage affecting the entire sales force at any point in the year could cost the company a staggering \$36 million in lost revenue. By committing to a 24-hour turnaround for repairs, Florida-based outsourcer Spherion is saving the client a minimum of \$4,000 per mobile user and safeguarding the client’s bottom line against a potential \$24 million loss.

■ **IMPROVING IT INFRASTRUCTURE.** Outsourcing IT management as well as process management can help cut costs and rationalize increasingly multifaceted IT infrastructures. This often involves:

■ *Boosting the quality of service.* “Not all IT shops have been able to invest in the appropriate required services,” says Richard Matlus, a research director with Gartner IT Services and Sourcing. “This can lead to a loss of good-quality services. Outsourcing can be used to bring the level of service to a higher quality in instances where IT shops have slipped.”

■ *Integrating and consolidating the IT enterprise.* Today’s networks and applications are more complex than

WHAT YOU OUTSOURCE—AND WHY—WILL DETERMINE THE KIND OF VENDOR YOU’LL NEED.

focus is on these areas, and, frankly, most large IT companies are more capable of staying abreast of this turbulence than internal IT staffs are.”

Don Bullock, CIO at services giant Eaton Corp., points to the ability to focus internal resources on areas of critical importance to your company—as well as substantial reductions in costs. “The opportunity exists to capitalize upon 20% to 30% savings,” he says.

With all those benefits, it’s no wonder some consultants estimate that Fortune 500 companies spend as much as 60% of their IT budgets on external suppliers. Gartner analysts believe com-

the many needs of the business as well as the outsourcing opportunities that abound. These days, outsourcing is easing many pain points:

■ **COSTLY, INEFFICIENT, NONCORE NECESSITIES.** Every business has to do accounts payable, for example, but few consider it a core competency. Outsourcing it along with other noncore functions can make bottom-line sense.

“IT groups that don’t have to ‘keep all the lights on’ can learn to focus better on aligning themselves with the business,” notes Morrow. “Our approach is to outsource what partners can do better, and we focus on the core

ever—especially as operational and decision-support systems must be integrated internally and externally while remaining secure, reliable and responsive. Successful integration, standardization and/or consolidation can be expensive and time consuming, and may involve technical skills your staff doesn't have.

Since EDS and Sun Microsystems undertook managed-risk server consolidation at Blue Shield of California, they have reduced the number of servers from 10 to three. Yet the results of consolidation have been impressive: Blue Shield has seen a two- to threefold increase in system performance, while system management and support requirements have been reduced, system administration and maintenance costs have been cut by more than 50%, and software support costs have gone down.

- *Coping with legacy systems.* Older, proprietary technologies can't deliver the connectivity, reliability or responsiveness your company needs to compete today. And, too often, simple upgrades can't be properly integrated.

IBM and JD Edwards teamed to upgrade storage networking solutions provider CNT's legacy systems. The result: \$3 million in savings with ROI in less than a year.

By abandoning its archaic mainframe for outsourcing, the Port Authority of Allegheny County doubled its processing time and boosted computer availability from 70% to 99.9%.

- *Overhauling the architecture.* Eventually, the demands of operational efficiency can force major infrastructure change, but your IT staff may not have the required experience and expertise to tinker with com-

mercially available software packages. Or, staffers may not have the technical, project-planning or management skills needed to succeed in an entirely customized development effort.

Working with Tata Consultancy Services (TCS), the New Mexico Department of Labor was able to reduce the time it typically takes states to deliver a new unemployment insurance claims system from three to four years to just 15 months.

- **EXPLOITING INTERNET OPPORTUNITIES.** Staying competitive means launching collaboration and e-business initiatives that can cut costs and pry the lid off new opportunities—and then integrating them into the enterprise. Even with tight IT resources, outsourcing these efforts—which often involves transforming business processes as well as developing and implementing new software—can help keep the competitive momentum going.

- **GETTING HELP WITH MANAGEMENT AND MAINTENANCE.** With customers demanding 24/7 access to just about everything, keeping networks and applications optimally available is getting tougher all the time. Yet security concerns remain paramount. Often the best option is to offload network and application monitoring and maintenance to outside experts.

Faced with slipping service delivery and rapidly rising complaints, Telefonica de Argentina consolidated IT operations and outsourced systems maintenance and application development to Accenture. The result: \$35 million in savings on application maintenance, a 20% savings on application management and a productivity jump of 20%.

REWARDS AND RISKS

There are many kinds of outsourcing, each with its own risks and rewards. 7-

Eleven's Keith Morrow shares some of the more common types.

Commodity outsourcing includes services that are sufficiently common and reliable, such as call center operations, and that may be more cost-effective to outsource than to do in-house. These days, even some mission-critical services are becoming commoditized, as customization yields to standardized offerings designed for shared (read: Internet-based) environments.

Reward: Economies of scale and efficiency

Risk: May be more to manage than it's worth

Tactical outsourcing may be attractive when a company lacks the resources and/or expertise to undertake specialized activities, such as Web site hosting or operating wireless local area networks (LANs).

Reward: Might be quicker than doing it yourself

Risk: A short-term fix that may bloat long-term expense levels

Strategic, or transformational, outsourcing helps a company transform its business by using a provider's comprehensive package of services, typically involving consulting, business process outsourcing and change management. For instance, Accenture's deal with the U.K. grocery chain Janesbury has Accenture not only assuming IT functions, but also helping improve supply chain and in-store operations.

Reward: Allows simpler management of fewer outsourcing partners, better discounts on a larger volume of spending

Risk: Complexity: "It takes the right skill sets internally to strike the deal and manage it," says Morrow, who cautions that, "Your outsource partner will not be best-of-breed in every area of delivery."

OPPORTUNITY KNOCKS | GET A GRIP

KNOW WHAT YOU NEED— AND WHAT YOU'LL GET

Outsourcers come in a variety of shapes and sizes. Systems integrators, for example, provide a range of professional services, including systems integration, software development and customization, and process engineering. Specialty service providers, or xSPs, on the other hand, offer a variety of on-demand services and may manage multiple projects.

These days, companies employ systems integration service providers to optimize prior investments more often than implementing and integrating new software. IDC estimates that worldwide spending on systems integration services will top \$100 billion by 2006. Meanwhile, constraints on

corporate spending have forced services providers to demonstrate quantifiable value for each customer, and triggered price pressures on U.S. IT services providers, which have increased their use of offshore resources, chiefly in India.

"Providers of professional services are specialized, limited in their service offerings, and are niche players either in the areas of systems integration, application maintenance, customer development or packaged software customization," explains Pavan Kumar, senior vice president of Satyam Computer Services Ltd., one of India's premier outsourcing vendors. "A customer will typically have to engage multiple vendors based on its requirements."

In the wake of the dot-com debacle, however, on-demand and IT utility service offerings are being developed by outsourcers to meet the need for xSP services, and to make the technologies and pricing schemes developed by xSPs available to their regular customer base.

"EDS, HP and IBM have won a number of very large outsourcing contracts recently that require them to deliver on-demand, IT utility services after consolidation and standardization of the client's existing infrastructure," says Gartner's Matlus.

For example, Three Rivers Pharmaceuticals reports saving a whopping 50% of its IT budget by using Oracle E-Business Suite Outsourcing, including \$400,000 per year in staffing costs

CASE STUDY

BRITISH AIRWAYS: MAKING CUSTOMER AND PROFIT CONNECTIONS WITH WNS

For a global airline like British Airways the primary processes that make the company work—from sales to customer service to finance and accounting to administration—are much more complex than they appear on the surface. Headquartered in London, UK, British Airways (BA) employs over 50,000 people and covers 552 destinations in 135 countries.

Not surprisingly, keeping this global organization running smoothly takes a lot more than flying the planes. It takes processing all the transactions that keep the planes in the air and the passengers happy. And it requires lots of connections. Flight connections, billing connections, even customer service connections. When BA misses a connection it means more than a missed flight. It means missed revenue, and missed opportunities.

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at its offices in New York (US), London and Ipswich (UK), and offshore delivery centers in Mumbai and Pune in India. Backed by its world class infrastructure and best-of breed technology, the ISO-9001 compliant WNS is a highly regarded global BPO company.

For BA, the benefits of its partnership with WNS have been impressive including a 40-50% cost savings (this lower cost base also makes possible

otherwise hard to achieve levels of financial control). What's more, various revenue recovery and audit activities carried out by WNS on behalf of BA have led to more than \$20 million of additional revenue recovery in 2002.

And customer retention rates are up 60%, while business velocity increased by running a

24/7/365 operation. Overall, its partnership with WNS has meant a bottom line impact of over \$100 million to BA.

Fortune 1000 clients like British Airways, Federal Express and Royal & SunAlliance rely on WNS to answer their phones, process their transactions, track their revenue, pay their suppliers and handle a wide range of critical processes.

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Departed Profits Aren't the Only Consequence of Missed Connections.



Business processes impact more than just the bottom line. An incorrect bill could result in customer attrition, a misplaced claim may mean a child without benefits, a delayed flight could mean a missed opportunity. At WNS, we have a proud heritage of ensuring excellence in service delivery for clients who trust us to manage their most prized relationships. Visit us to learn more.

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and an additional \$350,000 on hardware, software and maintenance expenses.

As businesses outsource tactical management and maintenance activities so they can focus on strategic efforts, xSPs are responding with supply chains that offer access to all manner of application, networking, management, process and infrastructure capabilities.

"These are end-to-end service providers, with competencies across the vertical and technology skill sets," notes Kumar. "xSPs are generalists, one-stop shops with capabilities to manage multiple projects and the ability to share their customers' risks."

IDC calculates that worldwide spending on xSPs will approach \$20 billion by 2006, while spending on application management services will exceed \$21 billion by then.

BANG FOR THE BUCK

Many CIOs report that 75% to 85% of their IT budgets are spent on managing the availability, performance, security, change and problems associated with applications, according to Tim Chou, president of Oracle Outsourcing. "This leaves very few resources to develop or implement new systems to help them run their business more efficiently and be more competitive," he explains. "The amount of effort an organization can apply—proactively vs. reactively—to these five key areas is directly tied to the level of service end users receive."

"Clients should not look to outsourcing for cost savings, but outsourcing can help control costs over time," says Matlus. "However, if a client is inefficient and their costs are higher than average, the service providers

should be able to reduce these costs to industry averages."

Some of the documented results that outsourcers have achieved are impressive:

- When it was time for Verizon Federal to re-bid its contract to provide telecommunications services to the federal government, it knew it would need help to compete. The company turned to Virginia-based project management consultancy Robbins-Gioia, which discovered several areas for improvement in Verizon's proposal, as well as in the overall management concept of operations. With Robbins-Gioia's onsite support, Verizon was awarded a new, eight-year contract to manage the government's telecommunications services program, valued at well over \$1 billion.

COMPANY PROFILE

RIGHTSOURCING®: WHAT BUSINESS DEMANDS



US based heavy equipment manufacturer achieved a 50% reduction in direct costs for its application and migration tasks. A major insurance group in the US slashed 30% of its costs when it reengineered its legacy systems.

What's the common factor in these two success stories? Satyam Computer Services Ltd, (NYSE:SAY). Satyam is the IT solutions provider for both organizations. What's more, the success story has been repeated for 270 global clients—76 from the hallowed Fortune 500.

No wonder that Satyam's clientele includes some of the best names in the key industry verticals it serves including, 4 of the top 5 Networking and Communication Equipment Manufacturers, 2 of the top 5 Health Insurance Companies in the US, 4 of the top 10 Global Pharmaceutical Companies, 7 of the top 10 Auto Majors, 2 of the top 4 Securities Companies, 5 of the top 10 Electronics & Electrical Equipment Manufacturers.

A global provider of the complete suite of IT solutions, Satyam employs over 9,500 highly skilled professionals working onsite, offshore or offsite to

offer customized IT solutions for companies in several industry sectors.

This unique Rightsourcing, delivery methodology is how Satyam helped the Fortune 500 manufacturer of heavy equipment rapidly deploy the latest version of an e-business application for its end users. And the Mid-western

insurance group relied on it to connect with its customers, agents and data on the Web while leveraging the power of its existing legacy system.

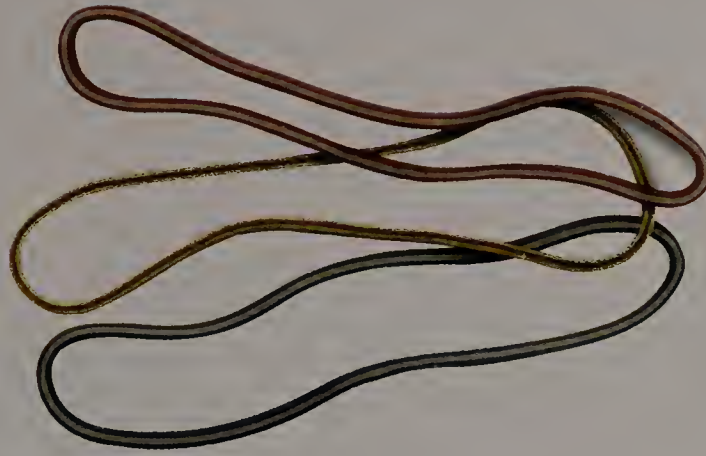


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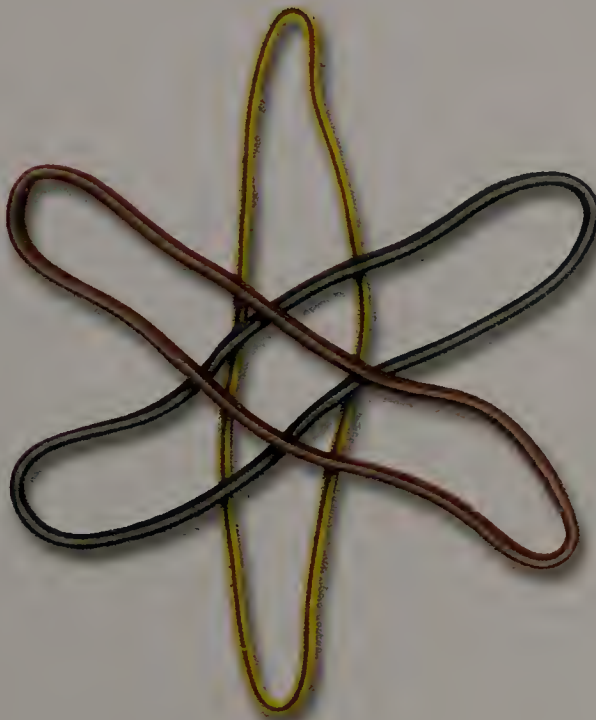
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What Business Demands

OPPORTUNITY KNOCKS | GET A GRIP

- MedUnite, a consortium of leading health insurance firms mandated to provide Web-based connectivity tools for handling healthcare transactions, recognized the need to better manage its clients. Outsourcing its CRM demands to Salesforce.com has saved MedUnite 25% to 35% in administrative time.
- After handing off day-to-day responsibility for managing its customer contact center (19,000 calls per day) to Spherion, an international manufacturer of electronic components saw an almost immediate impact on performance: Calls were answered faster, hold times were dramatically reduced, and customers received better answers to their questions. What's more, product return rates were noticeably lower and customer satisfaction levels were higher. Specifically, service levels improved by 28.6%, average handling time dropped by 9.9%, average speed of answered calls was up 43%, and attrition rates fell by 27.8%.
- Needing to ramp up quickly for the approaching holiday season, a leading mass merchant/retailer with 4,000 stores nationwide, plus Internet and catalog sales operations, turned to Convergys to help with customer service. In fewer than 75 days, 1,000 new agents were ready to meet shopper demand.
- Canada's CGI, an insurance business processing outsourcer, typically saves customers 10% to 33% by handling such processes as underwriting, billing and claims data.

"Keep in mind that it's not just technology that you're outsourcing," says Jim Leto, CEO of Robbins-Gioia. "Yes, you're choosing a technology—and the ability of the technology to perform is certainly a basic requirement of the arrangement. But you're also outsourcing part of your business, and if you don't have the capacity to manage that technology on an ongoing basis, you'd better find a way to acquire that capacity, or you'll never see the benefits of your new technology." **SD**

COMPANY PROFILE

GAIN COMPETITIVE ADVANTAGE USING CONVERGYS' SERVICES



Convergys is the global leader in integrated billing, customer care, employee care and transaction management software and services. Through outsourcing or licensing, it serves top companies in telecommunications, Internet, cable and broadband services, technology, financial services and other industries in more than

40 countries. Convergys brings together world-class resources, software and expertise to help create valuable customer and employee relationships for its clients. The company employs more than 44,000 people in 45 customer contact centers and in its data centers and other offices in the United States, Canada, Latin America, Europe, the Middle East and Asia.

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wireless, wireline, cable and broadband, satellite and next-generation companies can build a sustainable competitive advantage by relying on Convergys' experience and technology to deploy, manage and bill their services. These include service activation and provisioning, mediation, rating and billing, and customer care. Convergys' billing product portfolio consists of end-to-end solutions, pre-integrated application suites and individual application modules to meet all client needs. It delivers industry-leading software products, consulting services and data processing services as licensed, outsourced or build-operate-transfer solutions.

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OPPORTUNITY KNOCKS | OUTSOURCING STRATEGIES

OUTSOURCING STRATEGIES: WHAT, WHEN AND WHERE?

Too many CIOs, it seems, are stuck with bad outsourcing deals. Maybe that's got something to do with a recent observation by Gartner analysts: that less than one percent of CIOs have honed a strategy to deal with external service providers.

"Outsourcing fails when the user firm tries to dictate process management to the outsourcer," says Tom Antunes, vice president of industry solutions at Convergys Corp. "The reason you buy outsourcing is to reduce risk and increase the probability of success of your venture," he says. "You need to accept that an outsourcer will use their own people, process and technologies to attain your business goals."

A company that is considering outsourcing needs to craft specific business-impacting goals, Antunes says. The focus should not be how the outsourcer achieves this, but rather that the outsourcer attains service-level agreements that actually drive the company's business performance. "You need to tell the outsourcer what to do, then step away and let them do it," he says.

DECIDING WHAT AND WHEN TO OUTSOURCE

"We find that the companies that are most satisfied with their outsourcing decisions are those that were very clear on their objectives for the particular function," says Wayne Mincey, president of Spherion Technology Services.

These objectives can typically be grouped into three fundamental areas:

- Focusing on core competencies by outsourcing a noncore activity to a competent provider of the function;
- Reducing costs by outsourcing to a provider with cost and/or productivity advantages; and
- Strengthening a function by outsourcing to a provider with superior skills and capability in a particular function.

The key to determining the total cost of outsourcing, Mincey believes, is to examine both the costs associated

with items considered out-of-scope for the outsourcer as well as internal coordination and management costs.

"While many times a client outsources to have an external party help manage costs within scope, this is rarely adhered to over the long term," he says. As initiatives emerge that are out of the original scope, the costs associated with this work can come at a premium. To avoid this issue, clients should benchmark with firms similar in size and culture that have gone through the process and can help size the likely out-of-scope work levels.

AVOID THE PITFALLS OF PIECEMEAL OUTSOURCING

Identify the functions and components of your IT organization. And don't forget business processes, like payroll, or aggregations of processes, such as human resources. For each IT-supported function and component, settle on the best channel to deliver that support. Will it be in-house resources, hired expertise, facilities management (when resource ownership is shifted but the location remains the same), or outsourcing?

Map out the balance you want between service levels and cost. Decide, for instance, if you'll outsource a business-critical function if you can cut costs.

Assess longer-term impact. How will you ensure security and privacy, sustain in-house technical skills and manage external providers?

Have a contingency plan and an exit strategy. What happens if your service provider is acquired or goes bankrupt? If there's a major disruption to service? Decide the optimal length of a contract and develop a plan for minimizing the cost of switching providers.

Pick your providers with an eye to all your IT functions and components. Are there technical inconsistencies, gaps or overlaps? Do you need to make changes to processes that will affect outsourcing arrangements?

Begin negotiating with potential providers. It's a buyer's market, so you can wrangle about more than price. Consider increases in service and support levels, provider modifications to architectures to support your business, and expanded capabilities and features.

OPPORTUNITY KNOCKS | OUTSOURCING STRATEGIES

The company must also consider its own management time against the initiative, Mincey says. Resources to manage the supplier, management of the prioritization process, and pure service-level monitoring and followup can often exceed original expectations. "These are critical functions that cannot be shortchanged without jeopardizing overall results of the initiative," he says. Some considerations:

- **When you outsource, you must constantly manage your service providers.** The skilled staff needed to do this is part of the cost.

"Management of service providers, and the relationships between the organization and service providers, is one of the most critical elements of

successful outsourcing endeavors," says Kip Martin, vice president of Meta Group. "It enables the client organization to manage service levels, to assess the delivery of contractual obligations, and to repatriate business process and system knowledge back into the client personnel."

- **Project-based outsourcing may lead to unnecessary infrastructure complexity and redundancy.** Outsourcing decisions should be linked with your IT architecture and infrastructure.

"Don't bifurcate functions with significant synergy to other functions," advises Mincey. "For example, separating the management of help-desk and desk-side support functions allows breakdowns in accountability and the

potential to effectively leverage knowledge across these related functions."

- **Remember, it's about the relationship.** If you squeeze providers so much that they can't generate a profit, you lose, too.

"Beyond technical capabilities, the most important characteristic of a service provider is its compatibility with the client organization's culture, and the degree to which the client thinks the outsourcer and client organization can get along," says Martin.

OUTSOURCING OPTIONS: WHAT'S HOT

The current siege-mentality economy demands that firms gain competitive advantage through risk mitigation—there is no margin for error. Yet "CIOs

COMPANY PROFILE

WHEN OUTSOURCING ISN'T THE ONLY ANSWER



As the debate continues to rage about the relative merits of IT outsourcing vs. insourcing, there are several key questions CIOs can ask themselves to help find the right answer including: If we do it ourselves, can we do it better, faster, cheaper? Do we have the right resources? Can

we do everything in-house without diminishing our focus on strategic priorities? If we outsource, will we lose agility?

Sometimes answers to questions like these fall into that gray world of "maybe." When that happens, the best answer may be a combination of insourcing and outsourcing. For certain projects, such as a massive operating system deployment, a joint team comprised of internal project owners supplemented by external implementation experts can offer significant advantages.

BEYOND THE BOUNDARIES OF TRADITIONAL SOURCING

Looking beyond the boundaries of traditional sourcing absolutes proved to be the best approach for one large consumer health care products company. With many decentralized business units across the globe, the company's planned migration to Windows 2000 seemed like a perfect candidate for outsourcing—and for most of the organization, it was, offering the prerequisite

global resources and economies of scale for the organization as a whole.

But it wasn't the right answer for a handful of business units hit hard by recent revenue shortfalls. They needed the same high-quality service and speed, but they also needed the flexibility to find a lower-cost option.



"Looking for alternative solutions, this long-time client asked us how fast and how cost effectively we could migrate more than 3,000 PCs across the country," recalls Wayne Mincey, president of Spherion® Technology Services.

"Working in close partnership with our client, we completed that migration well ahead of an aggressive schedule and at less than half the originally estimated cost. Our

ability to quickly ramp up help desk resources to address a typical flurry of post-migration questions was an additional value-add that significantly boosted overall client satisfaction."

The right solution incorporates the value a client wants, which isn't always a perfect match for the value a vendor is selling. While outsourcing typically offers a high value proposition, in this instance, the flexibility to customize the value proposition was just as critical as resources, quality, and experience and cost.

For more information, contact www.spheriontechnology.com

OPPORTUNITY KNOCKS | OUTSOURCING STRATEGIES

are also being called upon to ensure that every project has a greater likelihood of success," says Convergys' Antunes. Therefore, outsourcing relationships must demonstrate that they can reduce the risk of successfully launching and operating the tactics that embody a user firm's strategy. Some of today's outsourcing hot topics:

APPLICATION DEVELOPMENT, INTEGRATION AND WEB SERVICES

In many companies, the organizational rules that drive business processes are buried in legacy systems—undocumented, certainly not standardized, and so old and ill-maintained that locating business rules can be highly complex and error-prone. It often makes sense to

outsource activities that integrate and/or webify applications, infrastructures or architectures.

One insurance firm needed help assessing its software development projects, which were costing \$1 million per week. By consolidating projects into a master schedule and defining resources, outsourcer Robbins-Gioia and the insurance company reduced annual software development expenditures by \$2.4 million, because the proper resources were deployed against the right projects, reducing redundant efforts.

NSC, a nonprofit group that verifies student information for employers, turned to Flamenco Networks for a Web service that ties customers directly into NSC's verification database. The

result: a 40% increase in calls and a one-month payback of upfront costs.

TECHNOLOGY OUTSOURCING

Oracle's term for assuming, for a fee, the administration of a company's Oracle database or application server, hosted either on Oracle's premises or the customer's, signals a trend. Other major software providers will now move into hosting. An independent review of Oracle's outsourcing customers by IDC showed a 44% to 66% reduction in overall IT costs.

Network Appliance, for instance, has used Oracle E-Business Suite Outsourcing to help consolidate IT systems, implement a scalable solution and decrease the cost of maintaining applications—resulting in 20% fewer IT envi-

CASE STUDY

HOW TO AVOID NIGHTMARE OUTSOURCING SCENARIO

Outsourcing can be a nightmare. The decision to use an outside vendor instead of inhouse resources is just the first step in a long, potentially risky chain of events. Even if you determine the right vendor and how they fit, who has the time and expertise to make sure they deliver? To avoid failure and ensure results, a rigorous management structure is essential.

Today more organizations are managing outsourcing engagements the way they manage other high risk initiatives: they are setting up a project management infrastructure. This combination of rigorous vendor selection PLUS the often neglected post-contract management structure has proven a perfect combination for many organizations. Why? Because this strategy allows them to establish milestones and performance benchmarks, see early warning flags, build a management structure for maintaining service levels, and establish a functional governance structure.

For example, the Department of Homeland Security's Bureau of Customs and Border Protection (CBP – formerly Customs) called in Virginia-based project management consultancy Robbins-Gioia to establish a vendor management process, plus comprehensive management and outsourcing oversight before the RFP went out on its \$1.8 billion, 15-year modernization program (involving more than 40 vendors). Robbins-Gioia worked with in-house staff to ensure the most efficient, effective outsourcing management possible.

What's more, for each phase Robbins-Gioia will define requirements, manage performance, and provide an objective management view to keep the project on track. Congressional and GAO criticism were harsh in the early stages, but confidence has grown significantly and recent reports recognize the program's management excellence.

In another example, a major telecommunications equipment manufacturer experiencing serious financial difficulties

wanted to offer early retirement to many of its most seasoned employees. But it still needed to maintain service to demanding Fortune 500 clients. The company called in Robbins-Gioia to implement a process that would re-engage a portion of that workforce as independent contractors, making them available to handle peak

demand. Robbins-Gioia provided a technology interface and management oversight for the installations to ensure high customer satisfaction, expedited timelines, and lowered costs. The end result was a reduction in operating costs by millions of dollars, improved customer satisfaction scores, and an average reduction in installation time by approximately 20%.



For more information and to download a white paper on vendor and outsourcing management, please visit www.robbsingioia.com/offers/cio/outsourcing.



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OPPORTUNITY KNOCKS | OUTSOURCING STRATEGIES

OFFSHORE OPTIONS THE MENU OF SERVICES AND PROVIDERS IS AS DIVERSE AS THE CULTURES

Significantly lower prices make offshore outsourcing immensely appealing.

"For 'offshorable' processes," says Neerja Bhargava, president and CFO of WNS Global Services, North America, "CIOs should expect 50% operating cost reductions coupled with productivity benefits thereafter. Our experience in most industries is that 10% to 20% of the cost base is 'offshorable,' creating the potential for a 5% to 10% reduction in total costs."

India is out in front in providing offshore services; other major markets include Singapore, Mexico, China, Russia and the Philippines. So-called nearshore sites—in Canada, Mexico, Ireland and Native American communities—are gaining in popularity, too, in the wake of Sept. 11-inspired security concerns. The demand for lower-cost offshore services has major U.S. providers—including IBM, EDS, Computer Sciences Corp., Accenture and Hewlett-Packard—launching

offshore operations of their own. CSC, for example, offers offshore business processing outsourcing services.

Meanwhile, plenty of large U.S. corporations are taking advantage of offshore outsourcing opportunities: Lehman Brothers, for instance, reportedly has plans to outsource \$400 million to \$500 million in IT services, at least half of which will be delivered by Indian providers.

Among the leading services provided offshore, according to a Gartner Dataquest survey, are enterprise application integration (EAI) services, applications outsourcing, packaged application implementation, and integration with legacy applications beyond applications development and maintenance services. Also, 2002 saw more business process outsourcing—particularly human resources, finance and accounting, call centers, and medical transcription and billing functions—head offshore.

"The 50% or higher cost reductions that offshore business process outsourcing enables can transform operating cost structure, cut capital assets and free up resources for new growth opportunities," says Bhargava. "This means a CIO can think dramatically differently about the benefits of outsourcing."

ronments maintained, a 50% drop in support personnel and a 32% ROI.

PROJECT MANAGEMENT

Managing complex, high-risk initiatives—including the development and integration of people, processes and technologies—with process-based solutions is an expertise that can be hard to come by, and worth outsourcing.

Using Robbins-Gioia's expertise, one of the largest global telecommunications providers was able to save an estimated \$31 million annually, reducing overhead expenses by 40% to 60%, and decreasing implementation time while improving client responsiveness and end-user satisfaction.

BUSINESS PROCESS

Single-process outsourcing (payroll processing, claims processing, accounts payable, etc.) has been supplemented by

aggregated process outsourcing offerings, in which the outsourcer assumes responsibility for processes, people and technologies affiliated with a broad functional realm, such as human resources.

WNS Group helped Town & Country Assistance, a market leader in motor claims outsourcing, reduce claims data entry costs by 55%.

Sun Life of Canada reports a \$50 million savings from outsourcing policy administration in just one business unit.

Five months after outsourcing its customer service to Convergys, a major software maker saw the number of its "very satisfied" customers shoot up by 12 percentage points, while the number of "very dissatisfied" customers plunged to 6.45%. Credit goes to Convergys' Global Assurance Network, a global technology solution that allows agents in India to view the same customer service screen that other agents around the world see.

"The key factor in business process outsourcing is going deep with one or a few vendors, and jointly innovating beyond the originally identified potential," says Neerja Bhargava, president and CEO of WNS Global Services North America.

SECURITY

Many organizations have begun to realize that the kind of security they need goes beyond their expertise. Managed security services providers can do the monitoring and management of firewalls and intrusion detection systems.

SUPPLY CHAIN MANAGEMENT

The opportunity to boost operational flexibility while lowering fixed costs and assets has organizations outsourcing a range of supply chain functions, including IT applications development. **SD**

MEASURING SUCCESS

BETTER MANAGEMENT EQUALS BETTER RESULTS

Accenture noted in a recent study that traditional outsourcing can deliver savings of up to 20%. But a more strategic approach to outsourcing, with the same level of service, can deliver as much as 50% cost savings while also improving market share and enabling strategic risk to be shared.

FIGURING FINANCIAL ROI

This involves direct cost reduction, which in outsourcing can range between 20% and 40%, depending on several factors:

- **Scope** (one function or an entire infrastructure). Broader scope equals greater potential cost savings, since the provider can more effectively streamline operations and achieve economies of scale.
- **Gap** (between a company's costs and industry average). Bigger gap equals greater potential cost savings.
- **Match** (between a company's needs and provider's capabilities). Better match equals greater potential cost savings.
- **Finding a service provider.** This can consume as much as 3% of a contract's value.
- **Transitioning.** Switching functions to an outsourcer may involve transferring staff or moving equipment.
- **Management.** This can cost up to 8% of the value of the contract.

FIGURING PERFORMANCE ROI

The key is value creation—improving an organization's effectiveness by boosting the efficiency of people and processes. Hard savings (measured financially) are overshadowed by other, "soft" factors, such as the value of responding to customers more quickly.

A good outsourcer can reengineer IT processes to improve both service levels and capabilities by standardizing on best practices. Hewlett-Packard, for example, applied best practices internally to incident reporting, with these results:

- Cut local end-user support personnel by 50%.
- Increased resolution rate at the first point-of-contact by 115%.
- Boosted customer satisfaction by 20%.
- Replaced 25 separate North American help-desks with one virtual call center in three locations.
- Reduced the average wait by 48%.
- Lowered the average cost per call by 22%.

FIGURING STRATEGIC ROI

Reinventing the business is the focus of strategic outsourcing ROI. Consider, for example, a retailer wanting to open an e-commerce sales channel and which outsources the entire effort, taking advantage of the service provider's expertise. The solution is better and delivered faster than if it were done in-house, resulting in quicker time-to-revenue.

Yet success depends on both the retailer and the service provider having a stake in the outcome, so their goals must be carefully and closely aligned. Thus, conventional ROI metrics won't be appropriate.

Instead, metrics that recognize the incremental value created by the outsourcing provider have to be devised and used as the basis for ROI. An internal Sears, Roebuck study found that a 5% hike in employee satisfaction delivered a half-percent increase in revenues.

OUTSOURCING ON THE WEB

**For additional tips on Vendor Selection Criteria,
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OPPORTUNITY KNOCKS | TIPS FROM THE TRENCHES

TIPS FROM THE TRENCHES

WHAT TO ASK BEFORE AND AFTER THE DEAL IS DONE

These days, outsourcing is a buyer's market, and service providers have become quite accommodating in their pricing and packaging. It's not unusual for CIOs to negotiate contracts that replace traditional fixed-price and time-and-materials contracts with more flexible transaction- and incentive-based alternatives.

And because there's much marketplace consolidation, CIOs have learned that it's worthwhile to look carefully into outsourcers' viability and financial stability—both before a contract is signed and afterward.

"If the current baseline and the definition of success are not established up front, and the relationship is not managed to meet those objectives, the initiative will fail," says Jim Leto, CEO of Robbins-Gioia. "If everyone is on the same page up front and knows what

according to a transaction-based model.

Designed properly, incentive-based pricing can benefit all parties. Consider a service provider compensated according to the number of help-desk incidents to which it responds each month. It has little incentive to reduce the number of calls it fields. Yet using fixed pricing along with the right contract parameters, however, the provider would make money only by designing out underlying problems and reducing the number of help-desk calls.

Be sure to use service-level agreements (SLAs) that incorporate quantifiable measures to nail down the scope and delivery schedules of your project. Some organizations use a technique called function point analysis to estimate project size, manage changes and communicate requirements to providers.

"Firms need to have solid SLA and measurements to make the deal fair and equitable in both directions," says Keith Morrow, vice president of information systems at convenience retailer 7-

Manage your service providers.

"Left to their own devices, outsourcers will over-engineer solutions and layer costs almost subconsciously over time," says Morrow. "They will tend to pick the safest solutions with the highest margins, which may not be what the customer needs."

GETTING THE MOST FROM OFFSHORE PROVIDERS

Offshore service providers can offer U.S. companies labor savings of up to 50%. To really get your money's worth, keep these considerations in mind:

■ SOME FUNCTIONS ARE BETTER OUT-SOURCED OFFSHORE THAN OTHERS

"Offshore outsourcing is not currently ideal for applications supporting rapidly or constantly changing business processes, and for applications that are technologically unstable," says Dean Davison, vice president and service director at Meta Group.

CIOs HAVE LEARNED THAT IT'S WORTHWHILE TO LOOK CAREFULLY INTO OUTSOURCERS' VIABILITY AND FINANCIAL STABILITY—BOTH BEFORE A CONTRACT IS SIGNED AND AFTERWARD.

the expectations will be—how risks and issues will be handled and how the engagement will be managed—that's more than half the battle."

Some suggestions:

Consider mixing pricing models. Some companies break up projects into phases—phase one might be done on a fixed-price basis, while the rest is executed

Eleven. "I spend most of my time in this area of the contract."

Before you sign the contract, make sure that you and the provider **agree on the solution to be provided, a transition plan, and multiyear pricing and governance.** Doing this after the contract is signed can get expensive. And carefully negotiate and review termination fees.

Projects with longer development cycles do better abroad than those involving substantial collaborative effort between business units or short lead times, he explains. The best bet for outsourcing offshore are projects that supplement existing IT resources for a short time, those involving new applications whose time-to-market needs are

OPPORTUNITY KNOCKS | TIPS FROM THE TRENCHES

accelerating and those that expand technical expertise.

"If the objective is to save money, then the leverage is in the number of resources you can put offshore," says Rita Terdiman, research vice president of Gartner IT Services and Sourcing. "If a project requires tremendous onsite interaction with end users, then you will not achieve this offsite leverage. The conventional wisdom is that you should be careful if there is too much complexity, change or ambiguity, or if the project requires an intense amount of business expertise (process, vertical or company-specific)."

The processes that a CIO uses to manage offshore outsourcing are more important than the outsourcer's tech-

nologies and tools. For offshore outsourcing success, focus on:

- An SLA that clearly defines project scope, responsibilities, etc.
- Senior executive management and active onsite project management.
- A quality assurance program, which will improve project deployment.

■ DON'T FORGET ABOUT SECURITY

Use multiple offshore providers from different parts of the world on the same project. If problems (such as labor or political situations) arise, you've got built-in backup.

Get assurances in writing from offshore providers about the security, privacy and confidentiality protections you want—but remember that getting legal

redress can be more difficult overseas.

Use code verification systems to review code changes made offshore.

A PARTING THOUGHT

"Many organizations are attracted to an outsourced model because of the potential for cost savings and the promise of fewer distractions from the core business," says Leto, of Robbins-Gioia. "If you don't really analyze what you need, why you need it and how you'll know if it's successful, nothing your outsourcer does will satisfy you—leaving everyone in a lose-lose situation. If you're very clear about what success means and how it will be accomplished, it's much more likely that you'll end up where you want to be." **SD**

CASE STUDY

KVAERNER POWER INC. BOOSTS PRODUCTIVITY, PROFIT, CUSTOMER SATISFACTION

To maintain its especially fast growth, Charlotte, North Carolina based Kvaerner Power Inc. (a unit of Norway's famous boilermakers, Aker-Kvaerner Group) knew it needed to modernize its financial operation and streamline how it managed huge equipment-installation projects. The solution would have to be reliable and easy to operate, so it wouldn't distract the company from its main business. Oracle E-Business Suite Outsourcing proved to be the answer, giving Kvaerner access to Oracle E-Business Suite and its tightly integrated applications for automating finances, order fulfillment, inventory and project management while delivering the applications conveniently and cost-effectively through Oracle's outsourcing service.

ROI OVER 100%

According to an independent study, Kvaerner generated enough benefits in productivity savings and enhanced profitability to pay for its Oracle investment in 13 months. Implemented in September 2001, the Oracle E-Business Suite Outsourcing solution began showing positive operating earnings by the end of 2002, and will continue contributing to operating margins for years to come.

The study also showed that Kvaerner's investment, in today's dollars, would yield approximately \$3.4 million in benefits over the life of the project, including \$3.16 million in productivity-based cost savings and \$0.23 mil-

lion in new-business profitability. Minus investment costs, the net benefit of the Oracle project comes to approximately \$2.7 million, generating a return on investment (ROI) of well over 100%.

SAVING MONEY; BOOSTING MARGINS

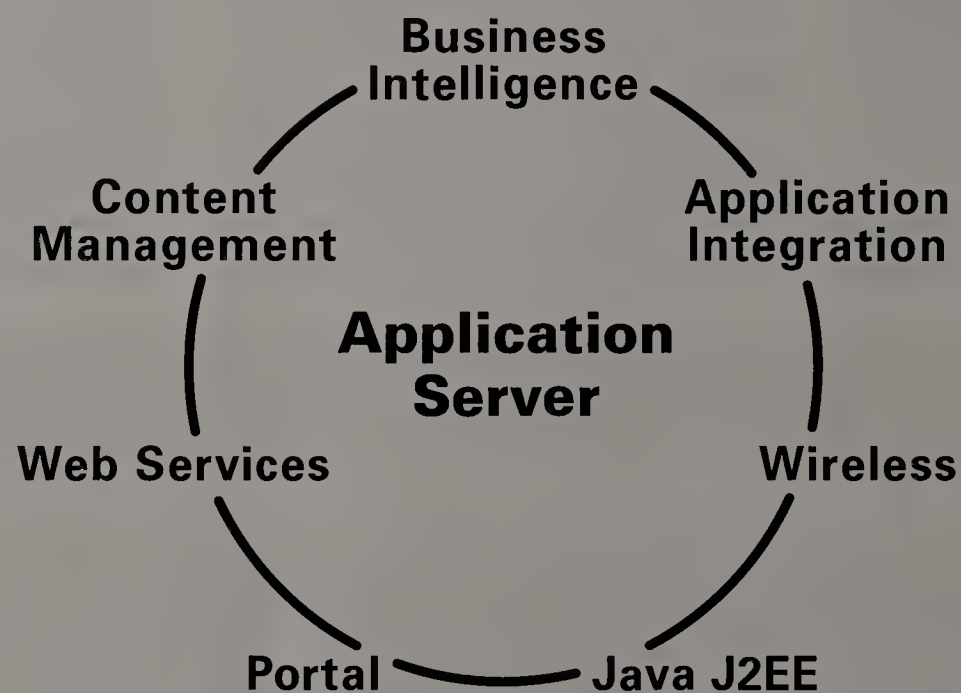
One of the largest sources of savings came from Kvaerner's decision to outsource the software to Oracle. Since it no longer had to perform routine software- and hardware-maintenance activities, Kvaerner was able to shrink its IT group 73% through attrition and contractor reductions, saving \$390,000 per year. And the company was able to permanently forego the purchase of new server hardware—a \$150,000 outlay the company had been making roughly every three years to keep up with its growing computing needs.

Impressive. But it's not the whole story. Since teaming with Oracle, Kvaerner has been able to reduce receivables, increase its cash flow by \$600K, report inventory turnover up 43%, and order processing time down by 83%. What's more, Oracle Outsourcing has yielded numerous benefits besides cost savings including more intelligent sales and marketing which boost gross margins, as well as better project visibility and cost control.



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CIO asked Westin to direct his attention to the role that the keeper of the customer database—the CIO—plays in managing this conflict. Senior Writer Sarah D. Scalet talked with Westin about that challenge.

CIO: In terms of privacy protection, how has the role of the CIO changed over the years?

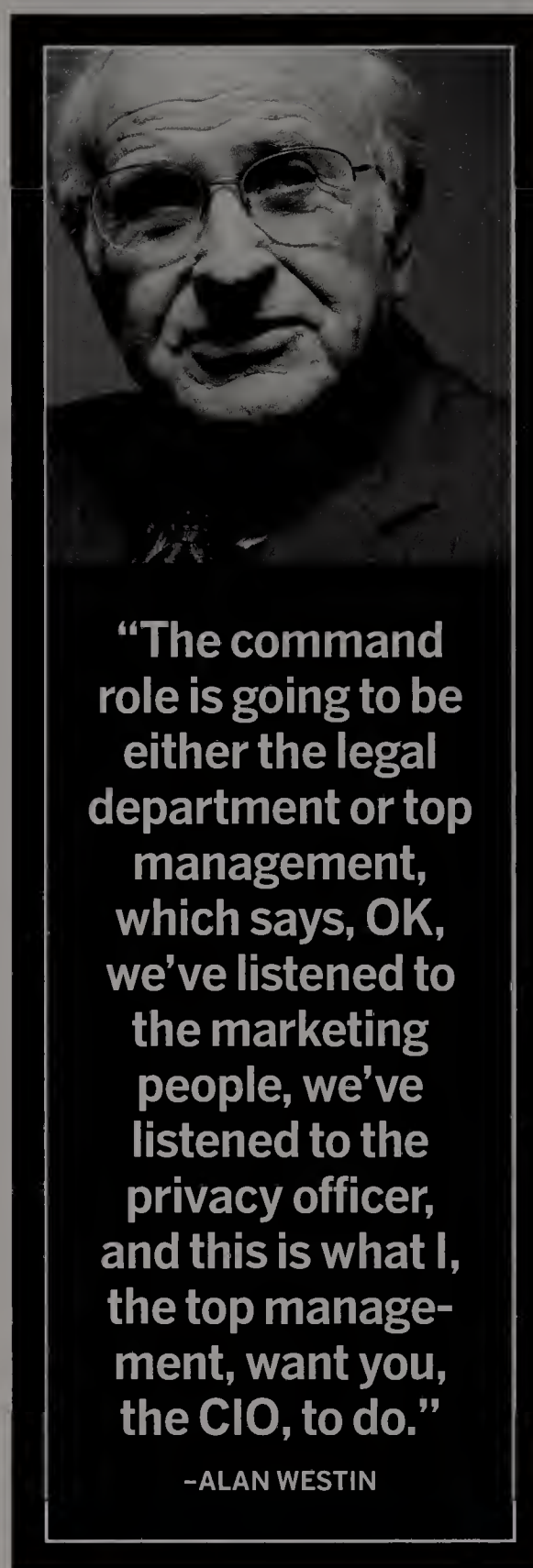
Alan Westin: It used to be that whoever was in charge of the information function looked at hardware and software solutions, and the users would just tell her what to do in terms of how data was formatted or delivered. CIOs today adjudicate between marketing and customer relations managers—who want data information brought in from third-party suppliers and want to produce detailed profiles of customers and projects—and the chief privacy officer—who advocates being careful to meet regulations at the state and federal levels.

It sounds like the CIO has to broker the relationship between those conflicting parties.

Yes, but I'm a little concerned about using the word *broker* because it implies that CIOs have the command role, and they don't. The command role is going to be either the legal department or top management, which says, OK, we've listened to the marketing people, we've listened to the privacy officer, and this is what I, the top management, want you, the CIO, to do. I don't think the CIO is a referee.

Opt-outs or opt-ins are where the rubber hits the road. The company says, If you don't want to receive this kind of material from us, check this box or call this toll-free number. That information goes into a system that the CIO administers. And against a database composed of 25 million credit card holders, the CIO needs to suppress marketing to the 100,000 or 3 million customers who have said, No, I don't want that communication. Obviously it raises huge data management issues.

If you get the marketing people and the privacy officer and the CIO together, they can say, We don't want to give up the



opportunity to market related products to our existing marketing database, but we know that there's a small segment of customers who will be outraged if that happens. The company might set up the following options: 1. Customers can opt out of any contact other than the service delivery that they've signed up for; or 2. They could opt out of any telemarketing calls but not opt out of written communication. The CIO's role is to show how refined programs like that can be implemented.

What is the ultimate goal of this balancing act?

This act gets the maximum number of your customers comfortable with the way you are handling their information and presenting them with options.

What about offering customers the chance to see the information in their records?

That raises a lot of complicated issues because what exactly is it that the consumer gets access to? If it's just a transaction, that's not a big problem. But behind transaction records is a marketing database. Most companies have added information from what's known as ZIP-plus-four databases, which will say that Alan Westin lives in a block in which the average house costs so much, and the ethnic make-up is such and such, and residents are mostly retired and so forth. The issue is, if I want to see what information a company has about me in my credit card file, do I get to see that? Most companies would turn purple at that idea. The Federal Trade Commission had a task force look at the issue, and it was unable to come to any firm conclusion because this issue divides the consumer groups and the business groups so fundamentally.

How does the USA Patriot Act affect the CIO's role?

An area that's going to be extremely important for CIOs is the whole question of compliance with demands from the government's new antiterrorist investigators, who want direct access to companies' consumer data, under the Patriot Act and CAPPs II [the Transportation Security Administration's new passenger screening system]. The government is given the legal right to ask for e-mail transactions, financial transactions and various kinds of telephone communications, and as a result, companies are going to be caught in the cross fire. On one hand, they want to comply with the government's requests because we all understand that this is not a phony danger. On the other hand, they have to worry about the trust of their customers; if customers feel that every time

Systems and security management a little out of control?



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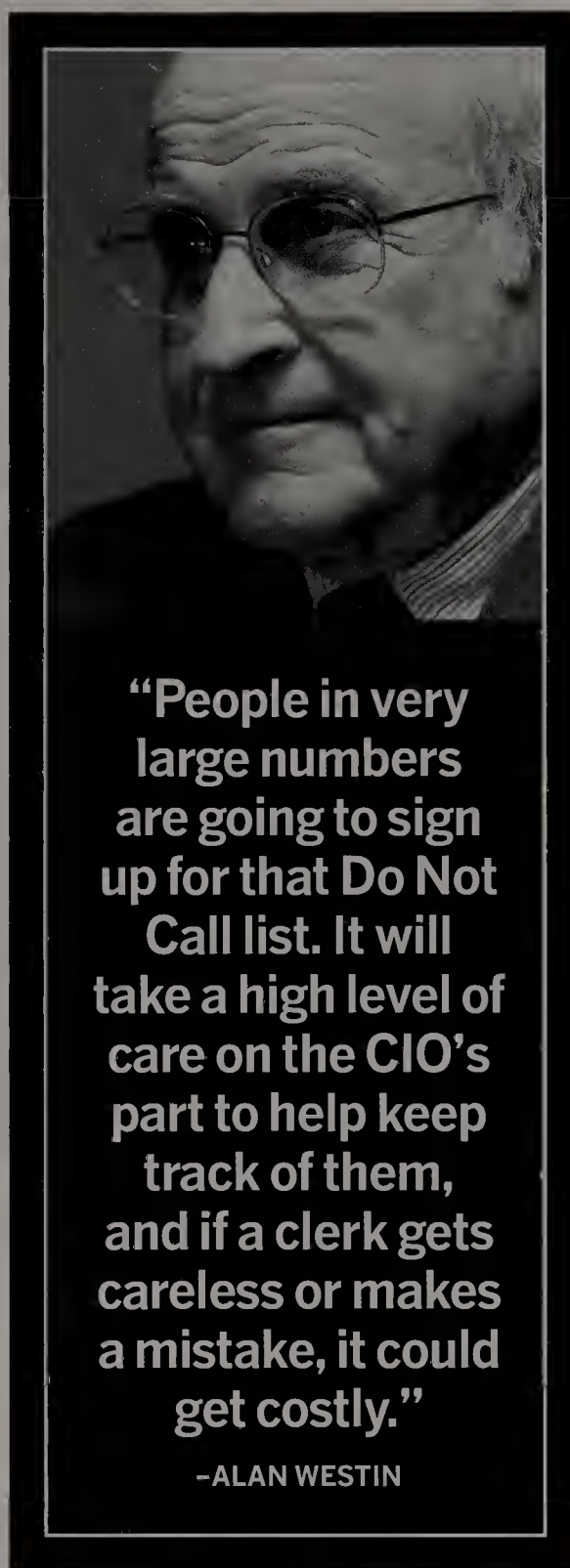

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they give information to their bank or credit card company or insurance firm it's going to the government.

We're just beginning to say, What kind of a system should there be for giving the government access? In the past, that was always under very strict rules set by things such as the Right to Financial Privacy Act of 1978, which said that if the government wants to get that information, it must have a subpoena or a court order. The Patriot Act wiped that away. But where is the control? Where will the safeguards be? The CIO is going to be involved when the federal government comes to Delta Air Lines or American Airlines and says, We want this information from you, and we want it in 30 seconds. I don't expect the CIO to stand up and say no. The privacy officer has to raise all kinds of questions about what kind of audit trail should be created. (For more information, see "What to Do When Uncle Sam Wants Your Data" at www.cio.com/printlinks.)

If you're talking about the competing interests of privacy and marketing and so on, when you insert an outside party like the government into the equation, it throws off whatever kind of balance the company was working toward.

That's correct. But that's what happened on Sept. 11. If we don't have access to this kind of information, then the likelihood of our being successful in controlling terrorism is going to be low. I think the Patriot Act is a justified piece of legislation. The issues are always the safeguards and the misuse of information. For example, DARPA's Total Information Awareness project was a thoughtless and overblown approach that somehow assumed that magic algorithms could be applied that would extract [mean-



"People in very large numbers are going to sign up for that Do Not Call list. It will take a high level of care on the CIO's part to help keep track of them, and if a clerk gets careless or makes a mistake, it could get costly."

-ALAN WESTIN

ing] from this enormous mass of private-sector data added to public data—that somehow up would pop the bearded face of Osama bin Laden.

How big of an impact do you think the FTC's Do Not Call list will have on companies?

People in very large numbers are going to sign up for that Do Not Call list, which is a registry of numbers that companies cannot call. However, it will take a high level of care on the CIO's part to help keep track of those numbers, and if a clerk gets careless or makes a mistake, it could get costly.

In a bigger sense, I think this is the beginning of the end of the targeted marketing era. That list is going to be a catalyst that moves companies into a whole consumer permission mode. If you think about it historically, until the 1980s, companies engaged in mass marketing—newspapers, TV, radio and billboard displays—then moved into target marketing. The idea was that we must know you to serve you; and we're going to collect a lot of profile information; and you should like it because after all we'll now know that you like to sail, so we'll tell you about sailboats, or if you like to go to Italy we'll tell you about Italian vacations. What companies didn't realize—or if they did, they didn't care—is that there comes a point where people get saturated by that kind of intrusive marketing. Between telemarketing and spam, you have about as fed up a public as I've ever seen on any consumer issue. The strongest piece of evidence is the passage of the Do Not Call list against the immense lobbying of the direct-marketing industry and all its practitioners. Public anger was so great that politicians and legislators just had to respond.

Do you consider yourself an advocate for privacy?

I'm a balance person. I identify dangers to privacy, but my solutions are much more about recognizing the competing values that need to be brought into some kind of harmony. I appreciate the roles of the American Civil Liberties Union, the Electronic Privacy Information Center and the Center for Democracy and Technology in always being the advocates of the total privacy solution, but I would never want to live under their regimes—not that I mind their pointing out dangers in various kinds of new anti-surveillance proposals.

I'm a Libra, which is the scales. On one hand this; on the other hand that. If you're a Libra, balance is what the stars have given you—or cursed you to. **CIO**

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habits of highly effective

For top CIOs, alignment is not a goal. It's a way of life. Here's a list of tactics that you should adopt as your own.

BY TODD DATZ

Reader ROI

- How strong CIOs define their roles through IT-business alignment
- How to engage business unit leaders
- Why IT governance is a key alignment factor

JIM MILDE, senior vice president and CIO for Sony Electronics, sounds euphemistic when he summarizes how the fortunes of IS have changed in recent years. "I think historically, when a company is growing like crazy, the role of IS is just try to keep up. We're going through a period now where there's much more focus on cost structure and process.

We're at a point where we believe there's a huge opportunity to drive continued operating efficiencies through our business." **TRANSLATION>** Growth and innovation have taken a backseat to relentless cost-cutting and short-term payback. That means the temperature has been ratcheted up on CIOs. For those who can't take the heat, the powers that be will make sure the kitchen exits are well-marked.



JIM MILDE

cios

Alignment Tactics

Time to throw in the towel and retreat into the IS cocoon? No way. Instead, the economic and budget pressures you face make now the time to renew your commitment to solidifying relationships with your fellow business executives. Now is the time to make sure your IS governance is effective. Now is the time to trumpet IT initiatives to the rest of the company. And last, but far from least, now is the time to put all your available energies into aligning your staff and projects and budgets and strategy with the lines of business.

Sure, alignment is one of those topics that never seems to go away. But “old hat” doesn’t mean “stuff that hat in the closet and forget about it.” In The Conference Board’s 2002 survey of global CEOs, 50 percent of the respondents identified business and IT alignment as a high priority. (By contrast, only 20 percent said implementing new technologies was top of list.)

Alignment is not new, but it’s certainly not a given either. “It’s still more common than not that IT and the business are not aligned, and that CIOs don’t have quality relationships with people that matter in the business,” says Michael Earl, professor of information management at the London Business School. CIOs must work with line of business managers to get benefits out of existing IT investments, to set performance targets, to answer the pressure to save money and wring efficiencies out of operations, he adds.

Below are six habits that highly effective CIOs employ to cope with the pressure-cooker arena in which they play. Some may be familiar; others may be additions to your portfolio. All of them will help you position yourself and the IS function to succeed now and in the uncertain months ahead.

HABIT NUMBER

1

Commit to the care and feeding of top management.

That doesn’t necessarily mean trying to get in on the CEO’s biannual white-water rafting excursion. But you’ve a better chance of



**“I’m more
of a
client service
advocate
than an
IT advocate.”**

**—Harvey Schafle, VP of IT
at DDS Distribution Systems**

earning a paddle if you’re on the top leadership team in the company. In a recent Gartner survey of CIOs, maintaining superb relationships with the senior-level team ranked first on the management agenda. “Actively engaging the business unit head and leadership team ensures you’re involved in day-to-day decisions. I think CIOs realize if you’re not sitting there at the executive table, you won’t be able to make a difference,” says Ellen Kitzi, Gartner group vice president of executive programs for the Americas. She argues, in fact, that if CIOs aren’t at the table, “then alignment doesn’t make a difference.”

Some CIOs with a seat at the table consider themselves business leaders first, technology leaders second. That paves the way for tight partnering; a business-first CIO discourages “the IT guy” label. Eugene Stein, chief knowledge officer and global head of technology at New York City-based White & Case, a global law firm,

says, “I’m part of the business side. I participate in the day-to-day business operations for everything, not just technology.” In fact, White & Case created the position for Stein because technology is a key part of the practice, he says.

It doesn’t hurt that Stein, who began his career in IT as an entry-level programmer, is also a lawyer. Stein put his two-headed background to good use by recently improving one of the firm’s knowledge management and CRM systems. After lawyers complained about the way they had to enter their timesheets, he and his staff redesigned the entry field and added an extra field where lawyers could type in what was worth knowing about the time they spent working on a project. They also can enter who the client contact was and what they discussed. Because of the information they’re capturing, “We’re now able to find key contacts, generate new business and provide better service to clients,” Stein says.

Harvey Schafle, vice president of IT at DDS Distribution Systems, a third-party logistics and fulfillment house, also tips toward the business side. “I feel I’m more of a client service and production advocate than an IT advocate,” he says. That means Schafle makes every effort to view IT from the users’ perspective and to make sure his department understands their needs. “There’s a tendency for IT people to do the most interesting thing, not necessarily the best thing,” he explains.

Stein reports to the head of his firm, and Schafle reports to his CEO and sits on DDS’s four-person corporate leadership team. Regardless of where you sit, building credibility and trust with line of business heads is critical. After Milde joined Sony Electronics last year, he spent the first few months soliciting feedback from the business units and external customers. What was IS doing and not doing well? Making that effort helped him build trust with his peers; it also gave business leaders a greater understanding of the IS agenda. And Milde? He also serves on Sony Electronics’ senior management committee.

**HABIT
NUMBER****2****Govern wisely.**

Having a strong IT decision-making structure in place can force businesspeople to think of IT's role in the overall enterprise (not just division by division). It can also better align IT strategy with corporate strategy—making sure that they are one and the same. Ideally, senior management is part of that structure.

At financial holding company National City, Executive Vice President and CIO Jim Hughes runs the strategic priorities committee, which includes the company's chairman, two vice chairmen and the heads of each line of business. The committee meets monthly and reviews all upcoming and existing IT initiatives. Hughes says he was brought in as change agent five years ago to redefine how IS worked and to overcome "a lack of confidence in the IS organization to deliver." One of the ways he did so was by redesigning the committee to include its current makeup. By working closely with the business, Hughes says, "there's been much tighter alignment, and we're much more strategic in the way we think about, plan and execute projects."

Successful governance doesn't require an IT supergroup. Divisional IT steering committees, made up of senior leaders in each division, are common in decentralized companies. At drug maker Schering-Plough, divisional information officers (DIOs) meet regularly with their business counterparts in the company's four divisions (animal/health, international, manufacturing, and sales and marketing). "The DIOs' mission is to tightly align the IT with the business," says Donald Lemma, vice president and CIO of the Kenilworth, N.J.-based company.

Governance is top of mind among CIOs these days, Kitzis says. And with good reason. "If I look at alignment, good governance and involvement with the leadership team, the last two are absolutely required elements. Alignment is necessary but not a sufficient condition for success," Kitzis says. (For more on IT responsibilities, see "Better Governance" at www.cio.com/printlinks.)

Risk-Taking (Still) Encouraged

Alignment doesn't have to mean you can't take chances

Don't sacrifice innovation, high returns and long-term strategy by playing too conservative a hand. CIOs face many a danger if they focus too hard on cost-cutting and short-term payback.

"I wonder whether or not they're thinking as strategically as they should be," says John J. Davis, president of John J. Davis & Associates, a CIO recruitment company. And it's hard to argue that innovation suffers as companies cut back on investing in higher-risk IT initiatives with long-term ROI.

John Hagel, a management consultant and author of *Out of the Box*, says that for the past couple of years, CIOs "are becoming much more risk-averse and more resistant to new technology. At the same time, line executives are becoming more risk-taking, particularly if it's [about] near-term cost reduction opportunities."

The example Hagel cites to support his thesis revolves around Web services. He has studied about 60 deployments of Web services and found the unexpected: Of those 60, at least two-thirds were under the CIOs' radar screen.

Hagel says that business line managers, who need to cut costs themselves, fear that risk-averse CIOs might put the kibosh on their Web services requests. So to get more functionality from the systems they already have in place and connect more effectively with business partners, the business line managers are going it alone.

Such deployments present a host of lost opportunities for CIOs; but there are ways CIOs can get their groove back.

"Many of the nontechnology business leaders driving this are feeling very exposed. They know [Web services] is not very mature and that there are questions of security and scalability...so they know they are taking real risks here," says Hagel. "It would behoove CIOs to become [greater] champions of this technology and collaborate with business colleagues to harness value."

Also, CIOs could be very helpful in ensuring that line executives deploy the technology in the areas that would have the highest impact for the enterprise. Finally, by proactively working with line execs, CIOs could ensure themselves a shot at developing an architecture plan that takes Web services apps into account. —T.D.

**HABIT
NUMBER****3****Assign direct reports to be business unit ambassadors.**

How can you truly understand the needs of a business—and manage user expectations—if you don't have an IS point person wound as tightly into that business as a Greg Maddux curve ball? Call them relationship managers or IS business partners. They're your lifeline to the business functions. In many compa-

nies, they may report directly to the CIO but have a dotted-line (and sometime direct-line) relationship to the head of a business.

At Capital One Financial, each divisional CIO for the major lines of business has a BIO—business information officer—who works with a business and operations leader at each line of business. "Any one of the three could sit there in a [senior] management meeting," says Gregor Bailar, executive vice president and CIO, which is a

Common Ground

Portfolio management lets CIOs create a shared view of IT priorities

In a do-more-with-less environment, CIOs are put in the position of saying no to new spending ideas. That makes it vital to actively engage the business side in IT planning. You could consider it sharing responsibility for making hard choices; or you could think of it as building a common view of the organization's priorities.

One way to immerse the business feet first is through portfolio management. Using this process, technology and business leaders identify the goals of the business, and then use objective criteria to prioritize and manage projects to achieve the highest value from the IT portfolio. All projects are viewed in relation to one another, not on a standalone basis. High-risk projects are balanced with low risk, and short term with long term. It follows the same principles as those employed in managing a financial portfolio. (For a guide, see "Portfolio Management: How to Do It Right" at www.cio.com/printlinks.)

For example, you might look at your portfolio and realize that most of the IT projects are in sales and none in manufacturing. That might be due less to real needs and more to the fact that the president of the sales division is a master at scoring IT investment dollars. A portfolio management approach attempts to take the politics out of investment decisions by taking a bird's-eye view of the enterprise.

Chuck Tucker, a Gartner vice president and executive programs research director, says there are two big differences between the traditional way of choosing IT projects and portfolio management.

The first is a life-cycle view of a project. "In the past, once you got approval, no one looked at the project again. You got a blank check. Under portfolio management, every time you review the portfolio—typically quarterly—you look at every project and say, Does this still make sense?" If it doesn't, you kill it, Tucker says.

The second is that looking at all projects together allows you to spot imbalances—too many high-risk projects or, vice versa, too many safe investments. Using portfolio management, you continually rebalance the portfolio to ensure maximum value.

The big benefit is greater alignment. Businesspeople need to be involved up front to make sure the business strategy drives the criteria for choosing projects. The prioritization process reflects whatever the organization's focus might be—market share, cost reduction or ROI.

—T.D.

statement exemplifying the confidence Capital One has in its BIODs. "They need to have two hats. One is be a relentless champion of their business area, understanding that business's needs. At the same time, they have to see how that impacts technology."

BIODs are often tasked with prioritizing IT projects for their divisions and working with their business counterparts to allocate spend-

ing and create delivery time lines for projects, Bailar says. The goal: seamless alignment.

Sony's Milde pursues alignment through his business account managers. "They're sort of like mini-CIODs," he says. Those managers must have a passionate understanding of their business; what he's *not* seeking are VoIP or database experts. It's a process he put in place last year, and he's assigned a

person to run that area.

IT business partner is the moniker for the aligners at Avaya. And in a slight twist, Vice President and CIO Mike Crowley is looking beyond IS at the network equipment maker to find talent for his current crop of seven business partners, and he tries to attract MBAs. "We'd like to infuse [our group of partners with] more people from the business," he says. After all, an MBA can be passionate about technology too.

HABIT
NUMBER

4

Join hands with business leaders at every opportunity.

If IS leaders aren't working side by side with business leaders to develop project lists and budgets, then your alignment is only skin-deep.

Capital One has a formal process for prioritizing and developing projects from the inception stage to the approved stage. Projects come from two directions: the top of the house (senior management) and the business units. Bailar calls the strategic imperatives from senior management "raising the octane"—in other words, they push the bar up for each business. Those projects are funded first. At the same time, money is allocated to the lines of business for the rest of the technology budget.

Capital One's business information officers work with their business counterparts to decide which projects are funded, schedule delivery time lines and so on. Bailar and the BIODs get together every month to do a resource management review, at which time they check in on the status (including resourcing and performance updates) of bigger projects. Taken together, Bailar says, the review and prioritization processes for projects are meant to align with the business imperatives of the company.

The BIODs at Schering-Plough meet with business heads to develop and prioritize projects. Then Lemma and his senior IT management team do what he calls a smoothing process, deciding which projects are accelerated, which are pushed back. The

A hand holding a white flag over a maze. The background is a dark, modern interior with a white maze in the foreground. A hand is holding a white flag on a stick, positioned over the maze. The flag is white and has some fraying at the bottom. The maze is made of white walls on a dark floor. In the background, there are some plants and a modern light fixture.

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Alignment Tactics

goal is to arrive at the projects with the biggest business impact using the most efficient amount of resources.

However formal your prioritization and budget process may be, don't forget to make sure the business has a real understanding of IT costs. "Transparency is critical," says Mike Ashworth, CIO and managing director of J.P. Morgan Investment Bank. "Historically, at a lot of tech organizations the financials are very opaque; people couldn't tell what was going on." He says that by breaking out spending for existing operations and for investments in new initiatives, "people start to understand what the levers are for making decisions."

HABIT NUMBER

5

Advertise your technology strategy.

Now that you have a good prioritization process, how about taking it for a stroll down Madison Avenue? In addition to letting the lines of business know what IT is up to, you can also spread it to the masses.

Mike Clifford, vice president and CIO for Whole Foods Market, publishes a strategic plan twice a year that takes a three-year look at the company's business opportunities while matching its IS capabilities to those opportunities. His employees generate the content by doing "mind dumps" of what IT projects they believe are needed in the functional areas to which they're assigned. Then they review those plans with their business counterparts, who act as the editors. Everything's about sequencing, Clifford says. "The great idea in marketing may conflict with the great idea in purchasing, and we probably can't afford to do them at the same time. It does generate some internal battles in

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Mike Clifford, CIO at Whole Foods Market, publishes a magazine twice a year spelling out strategic priorities. It's a joint exercise for both business and IT leaders.

which my staff is lobbying for their highest sequence item against other groups, so that makes it interesting."

Clifford's team then puts the information into a magazine format. "We write it in a chatty way, using great boxes that we sprinkle throughout the document," he says.

The IS group at J.P. Morgan publishes handbooks that Ashworth calls architectural road maps. Each sub-business—about 10 in the investment bank—publishes one. They're created in conjunction with the operations and business groups in each unit. "They're living, breathing checkpoints," he says. "They tell people where we are today and where we're going in terms of application architecture in six-month chunks." He adds that his group tries to ensure projects don't run beyond six months without delivering payback.

Opportunities appear when you put all these business product and process pieces in one place, Ashworth says. "You see interesting issues between geographies—for example, the securities business in Europe might be more efficient than in North America—and if there's technology differences, we can do something. We also map the operation costs. That helps us understand what we should go after," he says.

HABIT NUMBER

6

Make IT user-friendly. For everyone.

This tactic may not explode with the force of strong relations with senior management, but it certainly qualifies as an effective weapon. DDS's Schafle refers to it as "technical alignment"—making it easier for business customers to use IT tools.

Schafle cites Web-based reporting as an example. In the past, the tools used to extract data to create reports, such as OLAP-type spreadsheets, were controlled by IS. Schafle made it easier for his customers by developing DDSreports.com, a tool that allows them to extract data from a repository and build their own reports in the manner that suits them. "It's their data," he says. "Our job is to protect it. That tends to align you.... It builds rapport with customer service reps, call center reps and account managers. [They won't have to] fear coming to IS to get information." The tool is now available to external clients.

"Selfishly it benefits IS as well," he adds. "If someone is adept at using an OLAP tool, why should I restrict them from using that kind of capability?" That kind of thinking goes a long way toward peace on earth and goodwill toward IS.

Nobody said being a CIO was easy, especially when attempting to gratify insatiable users with smaller and smaller slices of the IT pie. But by continually renewing and refreshing your relationships with the business side of the house, you can ensure that nobody goes hungry—or if they do, at least they understand why. **CIO**

Reach Senior Editor Todd Datz at tdatz@cio.com.

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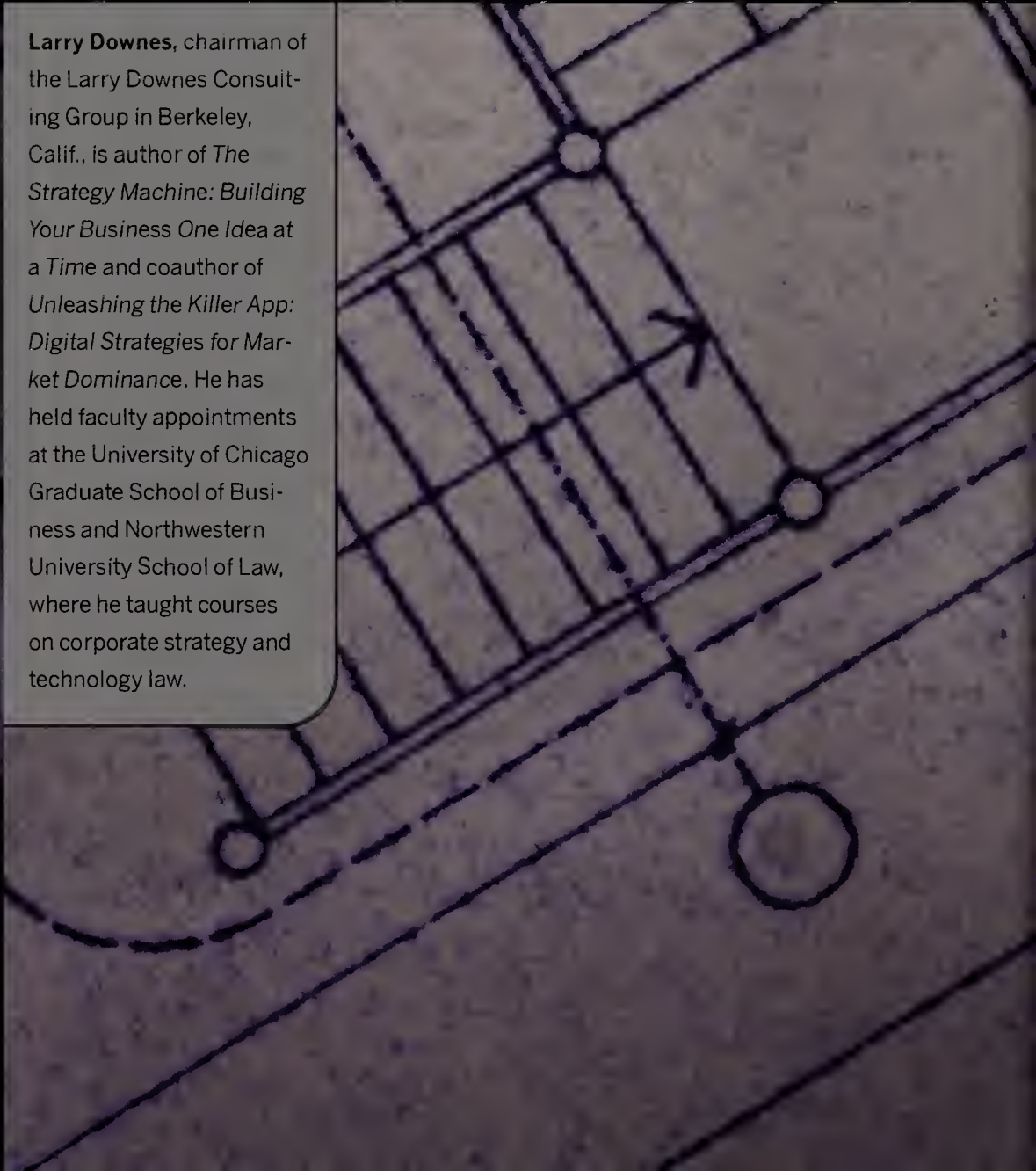


UNLEASHING KILLER ARCHITECTURE THE SHAPE OF THINGS TO COME

BY LARRY DOWNES

The coauthor of *Unleashing the Killer App* deconstructs the new-order IT architecture that will connect tomorrow's information supply chain

Larry Downes, chairman of the Larry Downes Consulting Group in Berkeley, Calif., is author of *The Strategy Machine: Building Your Business One Idea at a Time* and coauthor of *Unleashing the Killer App: Digital Strategies for Market Dominance*. He has held faculty appointments at the University of Chicago Graduate School of Business and Northwestern University School of Law, where he taught courses on corporate strategy and technology law.



AS WE CONTINUE TO SHOVEL AWAY THE DEBRIS FROM THE Y2K

and Internet buying binges of a few years ago, CIOs in a variety of industries are discovering something remarkable. Beneath the rubble, a dramatically different model for business computing is emerging, as different from today's architecture as was the shift from mainframes to client/server in the 1980s. Whereas PCs made it possible to distribute both applications and data closer to their users, the next-generation architecture will distribute even smaller units of software over the Internet, not just to distant users but to destinations such as equipment on the factory floor and packages on store shelves. That capability will create a new class of information products and services that will interact with each other across organizational boundaries using sophisticated messaging and security protocols. Data processing will become even more tightly connected to business processes, designed to scale up or down quickly as conditions require, supported by new kinds of outsourcing relationships with hardware, software and communications vendors. Sports fans might think of it as "extreme computing."

The individual movements that fuel this next-generation architecture scenario have been percolating for some time. But it's their coming together within the next two to five years that will create the profound new landscape in which companies will do business. Organizations adopting next-generation architecture will realize substantial reductions in development and maintenance costs, and participate in new forms of information exchange up and down the supply chain that will create new sources of value.

The good news is that much of the investment you've made in the past five years in networks, hardware and applications will turn out to yield unexpected dividends as part of this new architecture—not just productivity savings but, more important, competitive advantage and perhaps even new products and services.

The bad news is that, like earlier large-scale shifts in computing architecture, the transition will be accompanied by plenty of trauma. To take maximum advantage, your company will need to make more investments in infrastructure, rethink some applications and gear up for a major transformation of your IT skills.

The next-generation architecture emerges from the intersection of three important trends in business computing:

Cheap computing. Following Moore's Law, computing power continues to get dramatically

faster, cheaper and smaller all the time. Not only can computers do more things, more things can be turned into computers, including consumer electronics, appliances and, increasingly, individual products and packaging.

Distributed processing. Applications are being distributed closer and closer to the business functions they support, another long-standing trend. In the coming wave of distribution, processing will move away from human users to the objects in a commercial transaction. It won't be the driver of the truck who scans the package and uploads the data, in other words, but the package itself, which will send data continuously throughout its lifetime. A new set of business relationships will run parallel to the movement of goods and services, collecting and communicating information about every stage of every transaction—an important byproduct of the next-generation architecture I have called the "information supply chain."

Openness. Turbo-charging these dramatic changes is one unexpected development of the past decade: the unprecedented spread of TCP/IP, XML, MP3, and other nonproprietary networking and data communications standards known collectively as the Internet. Despite the dotcom meltdown, open data communications standards continue to evolve and take hold, creating the foundation for some of the most exciting new applications of next-generation computing.

Reader ROI

- ▶ The seven elements of next-generation IT architecture
- ▶ How tomorrow's architecture will create new value for companies
- ▶ What CIOs should do now to prepare

Seven Pillars of Architecture

The next-generation architecture is made up of the following seven key elements.

1 Reusable software components. Application software will continue to grow away from the monolithic, hard-to-maintain masses of code we've known in the past toward smaller components that communicate with each other to complete particular tasks. Generic and company-specific elements can be mixed and matched without undermining the overall design. Instead of exchanging data using brittle application program interfaces, applications will exchange standard documents such as orders and invoices and extract the data they need behind the firewall.

» **Enabling technology:** Object-oriented software. Object-oriented design tools and execution environments, such as Microsoft's Visual Studio, will replace traditional development and run-time environments with comprehensive programming, testing and operating environments, and manage large libraries of code. Nonprofit organizations including the insurance industry's Association for Cooperative Operations Research and Development, as well as software vendors such as customer management provider Chordiant Software, are building document and process objects that are understandable within industries and functions. Another consortium, XML Common Business Library, is working on a standard for XML documents that cross industries. We will finally overcome the long-standing limitations of object-oriented tools' performance, functionality and critical mass of users. The solution is coming in part from the rapid increase in computing power of both servers and client devices to fuel the added processor requirements of the object-based approach, and

business case from the customer's point of view, especially those already under pressure to reduce IT spending growth and focus on short-term productivity gains.

» **Key impact:** Software development becomes a cottage industry. Users will buy software in pieces—some from traditional application and systems software vendors and others from companies specializing in particular business functions, for example, credit scoring or industry-specific legal compliance. Companies will also write their own modules for activities in which they already enjoy a competitive advantage, eliminating the painful and unsatisfying make-or-buy dichotomy of today's environment. Open-source enthusiasts, both at the system and application software level, will accelerate the spread of reusable and extendible code.

2 Openness. To maximize companies' abilities to collaborate both inside and outside the organization, we will build software and networks on open standards for process, data, user interface and, most important, information exchange.

» **Enabling technology:** Standards. In addition to the next generation of existing Internet standards, including XML, open architectures will play a dominant role for lower-level operating systems, such as Linux, as well as higher-level application-to-application interaction. Over time, application vendors will build on emerging standards to create higher-level rules for interchangeable business documents and processes for managing them. Industry and vendor consortia such as the Web Services-Interoperability Organization (WS-I), supported by BEA Systems, IBM, Microsoft and others, as well as the Universal Business Language promoted by Commerce One, SAP, Sun and others are vying to create the winning combination of standards and applications. Each group has a slightly different definition of openness, but all the participants understand that they can sell new prod-

The struggle to arrive at a common, open standard infrastructure will be long and complicated, but ultimately a combination of public, private and consumer interests will force a resolution.

in part from major commitments by leading software vendors to build robust development tools and run-time environments. Principally, the big vendor battle is between Microsoft, with its largely proprietary .Net Web services, and IBM's on-demand computing platform based on Linux and Websphere open systems. Who will win? IBM is betting heavily on the open architecture of Linux, which has fans in the developer community. Microsoft is targeting the installed base of Windows users, hoping to bring them onto the next-generation platform gradually. For now, both companies need to do a better job of making the

ucts and services to users only when collaboration across the supply chain becomes cheap and standardized. Industry-led groups such as MIT's Auto-ID Center, which is developing open standards for electronic product codes, and the Uniform Code Council, which is developing business data standards using XML, will likewise play power broker roles in establishing common ground across platforms, industries and companies.

» **Key impact:** The data warehouse will become the data retailer. Open standards will make it possible to unlock the potential of corporate information trapped in your unwieldy or inaccessible

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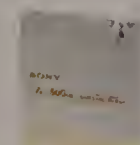
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databases. More data and tools for sharing it will lead to new sources of productivity within your company, such as business intelligence, and new sources of profitability outside your organization. For example, consolidated data from similar products or data from across the supply chain can provide invaluable market research, which you can use to improve pricing, promotion, new

are specific to the device and transparently obvious to the user.

» **Key impact:** Collaboration becomes device-independent. Recognizing that different users will interact with applications using a wide range of devices (many yet to be invented), interfaces will evolve from hard-coded dialogues to real-time requests for information formatted and presented in ways meaningful to the

The information supply chain will begin to function as an independent source of revenue, generating invaluable data about product performance, consumer behavior and logistics.

product development and maintenance. Even a few new connections (perhaps to your closest trading partners—key suppliers and major customers) will add tremendous value, but the biggest gains won't come until major participants across the supply chain make the switch. The struggle to arrive at a common infrastructure will be long and complicated, but ultimately—think railroad gauges, electrical outlets or even rules for driving—a combination of public, private and consumer interests will force a resolution. For now, most CIOs should avoid committing irreversibly to any one of the competing efforts, but should watch the Darwinian struggle carefully, experiment when possible and adopt particular solutions when the business case justifies doing so.

3 Adaptable interfaces. One-size-fits-none user interfaces will evolve into device-independent interactions that can be customized by users or by the application itself as it learns how different users want to send and receive information. The same user will take on different profiles depending on the device she is using at any given time, be it a PC, telephone, PDA or cell phone. In many cases, devices will communicate directly with each other without the intervention of a user. Next-generation interfaces will be as different from today's icon-and-window model as that paradigm was from the C prompt of DOS.

» **Enabling technology:** Consumer electronics. During the past 10 years, computing has increasingly migrated to noncomputer devices made and marketed by consumer electronics companies, the best of which are experts at creating natural man-machine interactions. Manufacturers of video game consoles, digital video recorders and cellular technologies understand that consumers need limited but relevant information at home or on the road, even if the same consumer becomes a power user of more complicated applications back at the office. These devices offer far fewer options than a desktop computer, but appropriately so, and they will point the way to effective interfaces that

device and the role of the user at any given time. Because of those more natural, adaptive interfaces, the interaction you have with customers, suppliers and employees will become truly collaborative in nature.



4 On-demand scalability. To better handle the rapid pace with which global businesses buy and sell major assets, the next-generation architecture will be capable of rapidly adding or removing capacity and connecting or disconnecting operating units without breaking the network, applications or databases.

» **Enabling technology:** Computing on demand. Building on the component software architecture and open standards foundation, the next-generation platform will lead to new forms of outsourcing. Not only will some applications be handed over to service providers, but so too network, processing and data storage. (Securing that interaction is another feature of the next-generation architecture; see key element six.) IT services companies, including CSC, EDS and IBM, already control computer operations for global businesses and are investing today in computing centers that can quickly switch on or off major resources as the business needs of their customers change. The component-based software architecture, at the same time, will allow companies to keep operating assets loosely coupled, making it easier to add or remove them. (For more on utility computing, see "Plug and Pay" at www.cio.com/printlinks.)

» **Key impact:** IT will adapt to your company rather than the other way around. Today, one of the major costs in both time and dollars of mergers and divestitures is the fragility of mission-critical IT systems. With an infrastructure built on open standards and supported by on-demand resources, the scalable company will be able to plug and unplug divisions and even acquire competitors without having to wait for applications to catch up with the changes a year or two later. Having

Talk to Larry Downes



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converted to a standardized application and desktop environment in the late 1990s, oil giant BP, for one, has leveraged that investment to simplify its acquisitions of Amoco and Arco, and it now runs the business of its former competitors on its cheaper and more reliable platform. The Amoco takeover was completed nearly a year ahead of schedule, in part because BP simply replaced Amoco applications and hardware with its own standardized environment.

5 Compartmentalized application components. Following a long-standing trend toward separation of data structures, application logic and user interfaces, next-generation applications will manage each component independently, making modifications far simpler. The job of enhancing the next generation of legacy software will not be met with the same dread it is in today's environment, where even a small change can ripple through to hundreds of other programs, files and screen layouts.

➤➤ **Enabling technology:** Web services. Though poorly understood, the true promise of Web services will be to simplify not only application development but, more important, application maintenance. In the model for Web services developed by vendors participating in WS-I, small software modules located anywhere on the Web will be able to interact with each other using standard

ment time, cost and operations overhead, and it's succeeding despite being in a ruinous vertical industry. (For more about the airline, see "JetBlue Skies Ahead" at www.cio.com/printlinks.)

6 Built-in security. External threats to systems security, coupled with growing consumer privacy concerns, will figure prominently in the design and operation of next-generation systems, with likely involvement by various governmental agencies from state to international levels (likely spurred on by privacy lawsuits). Since next-generation applications will reach much deeper into day-to-day activities of consumers, businesses and governments, they will require built-in safeguards far beyond passwords and physical security.

➤➤ **Enabling technology:** Agent-based computing. Monitoring software will run side-by-side with applications to test the validity of every request over the global open network of integrated applications. Each transaction will carry its own encrypted security profile and generate a secured audit trail. Autonomous software using agent technology will negotiate in the background to ensure that interactions in the open marketplace of Web services follow the rules. The same technology will be used to manage the millions of interactions taking place across the network, perhaps supported by regulated service providers that offer secured audit trails and public records.

The most important technique for managing uncertainty and hedging against the risk of disruptive change is to adopt a portfolio approach to IT investments.

protocols, making it possible to cobble together computer systems that reflect the needs of your organization, even—perhaps especially—as those needs change. Your IT organization will only have to worry about the pieces that describe functions specific to your business. (For more on Web services, see "Web Services: Still Not Ready for Prime Time" at www.cio.com/printlinks.)

➤➤ **Key impact:** Ownership of key IT components will migrate to the organization best suited to develop them. In the rush to present users with Web-based interfaces—and with few development tools available—most companies built first-generation Internet applications that hopelessly entangled data, logic and interface. Connecting the new software to existing systems proved difficult, and adding new functionality or taking advantage of new Internet technologies proved even harder. Most companies will start over in the next two years, adopting a ruthless insistence on true separation. Once they do, the Web services model will flower. Some companies aren't waiting. Startup airline JetBlue has built all its systems from scratch using Microsoft's .Net environment. The company claims dramatic reductions in develop-

➤➤ **Key impact:** The integrity of data will become a matter not of engineering but of public policy. Capability-based technology for securing systems, along with encryption techniques, must be introduced into next-generation applications and designed into the highest levels of your network. The combination of anxiety over global terrorism, the increasingly open exchange of data between participants in the supply chain, and the growing unease among consumers about the collection and use of personal information, will move security to center stage, where regulatory agencies, legislators, lobbyists and courts will play a prominent role in design.

7 Disposable computing. As the cost of computing continues to decrease, it will become cost-effective to introduce some level of intelligence to each individual item in commerce. The Auto-ID Center at MIT estimates that about a trillion new Internet-friendly "devices" will be added to the network in the next 10 years, with chips and radio transmitters simply included as part of a product's basic packaging.

» **Enabling technology:** Moore's Law again. Today, companies including Wal-Mart, Procter & Gamble and Gillette are experimenting with cheap electronic product codes that transmit data using radio frequencies. The emerging standard will assign every item—not just every SKU—with a unique identifier. And an Internet address.

» **Key impact:** The information supply chain is completed. The emergence of disposable computing will test the scalability, flexibility and security of next-generation architecture by flooding it with trillions of new transactions, sending and receiving small amounts of data that track the flow of goods and services throughout the supply chain. As more and more data becomes available in

From a technology standpoint, the most important technique for managing uncertainty and hedging against the risk of disruptive change is to adopt a portfolio approach to IT investments. The most common mistake companies make during slow periods is to terminate any project that will take more than a few months to pay off—effectively shorting the future. (For more on IT portfolio management, see “Portfolio Management: How to Do It Right” at www.cio.com/printlinks.)

You must, of course, spend most of your IT dollars on running the business, but you also have to spend to change the business. Divide your budget into short-, medium- and long-term projects, and agree with the rest of your executive team on an appropri-

You must educate industry groups and trade associations on the long-term benefits of robust data exchange across the supply chain so they in turn can head off as many regulatory disasters as possible.

usable forms—particularly data generated after a product leaves the store—the “information supply chain” will begin to function as an independent source of revenue, generating invaluable data about product performance, consumer behavior and logistics. Look for forecasting applications—which today rest on shaky assumptions—to become scientific and reliable. Bundling information services with physical products such as smart appliances will be another key source of new value. The understandable concerns of consumers over data privacy will be resolved along the way, largely by consumers sharing in the value derived from the use of their data. Today, grocery stores trade significant price discounts for consumer data using preferred shopper identification cards.

Now What?

Companies that have the most to gain from the information supply chain are retooling right now for the next generation, even when doing so requires significant investments during challenging economic times. Amazon.com, for example, embraced open source in 2002, converting from Sun's proprietary operating system to Linux. The switch is simplifying the process by which freelance retailers known as Amazon associates can build links to Amazon applications into their websites, using Amazon's payment, fulfillment and customer service without actually installing the software.

So the real question now is not *whether* but *when* the next generation will become your computing architecture. More to the point, given some unavoidable uncertainty about how quickly the next generation will arrive, what, if anything, should you do now to prepare for the change and help your company profit from its potential?

ate ratio among them (perhaps a percentage allocation of 75-15-10). Then stick to the ratio whether the budget goes up or down.

At the same time, bear in mind that the real obstacles to adopting next-generation architecture, as in previous transitions, will be more organizational than technical. Mastering the seven elements of the next-generation architecture will challenge IT professionals to not only cultivate new technical skills but to also foster a better understanding of their companies' business. Capturing complex processes in code and identifying opportunities for profit from new data sources will work only if the boundaries between IT and users are as permeable as the data that is free-flowing in the information supply chain.

As the next-generation model makes more data available from business partners and consumers, the psychology of privacy and security will take center stage. Data privacy and security concerns—poorly understood today—can be solved but only with industry leadership and public education. Unfortunately, governments are shooting first and asking questions later, if at all. Laws and regulations that are being adopted in haste today will later prove to have created more problems than they solved. As CIOs, you must educate the industry groups and trade associations you belong to on the long-term benefits of robust data exchange across the supply chain so they in turn can work with consumer groups and regulatory bodies to head off as many regulatory disasters as possible.

Most of all, keep your eyes open. Be ready to jump on early opportunities to profit from any of the seven elements of next-generation architecture as soon as you spot them. As the comedy team The Firesign Theater likes to say, “Live in the future. It's happening now.” **CIO**

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Reality Bytes

A Cold Look at Hot Trends

Looking on the Sunny Side

Within the gloomy clouds of economic malaise glitter the silver linings of cheap thrills and tiny triumphs

BY MEGAN SANTOSUS

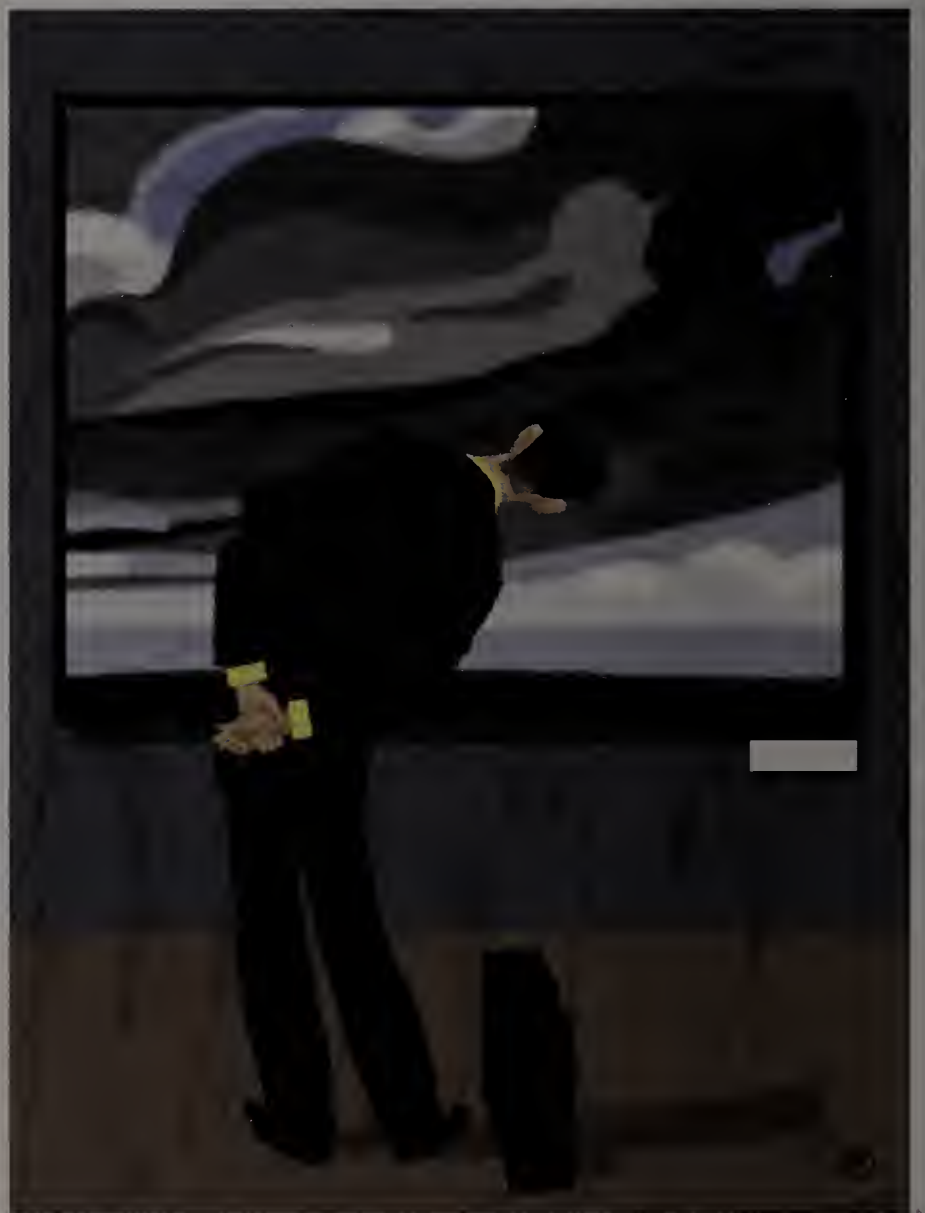
SHAKESPEARE JUMPED THE GUN. It was the winter of 2002-2003 that was truly the season of our discontent.

Unemployment was up. The trade deficit was up. Gas and home heating oil prices were up. And anxiety over the impending war with Iraq and the threat of terrorism was way, way up. About the only things going down were revenue, stock prices, retirement account balances and consumer confidence.

An eternal pessimist, I grudgingly vowed this past New Year's to adopt a more upbeat attitude. After all, there are two sides to every coin, and the difference between the happy and well-adjusted folk and those prone to melancholy and malaise often comes down to a mere shift in perspective. So in my effort to achieve my resolution, I've taken a good hard look at this past winter. Lo and behold, there have indeed been a few silver linings hiding inside those ominous black clouds.

Reasons to Be Cheerful

The airlines. No industry has suffered more directly from the 9/11 tragedy than the airlines. Take rising fuel costs, the fear of flying and dwindling corporate travel budgets, and you have a



nice recipe for Chapter 11. Among the big carriers, United Air Lines is the leader on the runway to oblivion. To save money, the airlines are skimping on their already pathetic snack menus and clamping down hard on carry-ons by charging fees when passengers exceed the limit. It says a lot about the state of the industry when the only bright spot is provided by a plucky startup called JetBlue.

From a passenger's perspective, however, the industry's struggles have resulted in certain fringe benefits. With fewer passengers, there's much less jostling for aisle seats, pillows and those precious onboard magazines. With the airline employees' jobs perhaps depending on whether you're having a good experience, everyone seems more than a little bit friendlier, more eager to be of service. And fewer passengers translate to fewer people who are hypersensitive to peanuts. (Hopefully that means I no longer have to scarf down my candy bars

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furtively to avoid detection by the peanut police.)

It's said that bad times bring out the best in people, and that adage can be applied equally as well to the airlines. The next time you're on a flight and you hear the attendant chirping over the PA, "Thanks for flying with us today," you can be certain that these days they actually mean it.

Capital gains. For a while there, around the turn of the century, I actually entertained fantasies of being an amateur version of Warren Buffett. Every stock I bought recorded double-digit gains every few months. Everything was going so well I started to worry about the dreaded capital gains tax.

That was then.

Now, if your investment portfolio is anything like mine, you haven't seen a capital gain since the third quarter of 2001. Thankfully, the tax code provides some solace.

The next time you're on a flight and you hear the attendant chirping over the PA, "Thanks for flying with us today," you can be certain that these days they actually mean it.

With regard to my federal taxes, I can throw that Schedule D right into my circular file. One less tax form to fill out and double-check translates into almost three more hours of quality time I can spend with my family. But the real value add comes when it's time to file my state return.

Taxachusetts—I mean Massachusetts—has a lovely capital gains formula. Forget about long-term gains and short-term gains, says the Commonwealth. That's for the federal simpletons. In the land of the bean and the cod, tax rates for capital gains can fall into a handful of categories. For example, if you've held a stock for less than one year before selling it, you're going to pay the piper in a big way. But as one might expect given our frugal puritan heritage, the rate goes down according to how long you've resisted the urge to go wild and cash in. There's one rate for stocks held for one year but not more than two; another for stocks held for two years but not more than three. For more than three years but not more than four? Yet another rate. This goes on until you've owned a stock for more than six years. After that, the state stops torturing you and fixes the rate.

Things get really exciting when you buy stock during several years through an automatic investment plan and then sell the whole lot. When that happens...well, that's when a PhD in finance comes in handy. But I don't have to worry about that

now. No capital gains means me and my calculator will remain casual acquaintances for the foreseeable future.

Work ethic. With layoffs, productivity is on the rise. Driven by the fear that the pink slip is in the interoffice mail, fewer people are doing the work previously done by many. (The many, of course, already received their pink slips.) Consequently, there's a sense abroad that more than ever, people are keeping their noses to the proverbial grindstone.

But layoffs and the fear they engender are only part of the reason why employees are exhibiting a newfound work ethic. With 401(k)s and other investments taking a beating, no one's wasting their time checking stock prices on the Internet. Plus, no raises and no bonuses have cut down on online shopping from the office. Truth is, there are fewer things to distract us from our work in a down economy.

And the biggest distraction of all—the promise of early retirement—has gone the way of the defined-benefit pension plan. Nobody expects to cash out and hit the links by 45 these days. Indeed, with early retirement rapidly receding to pipe-dream status, there's a new emphasis on long-term career planning. For people looking to ensure their financial future, there's a new

need to buckle down and concentrate on getting ahead. This translates into greater dedication among employees who realize that the stock market won't be their ticket out of the 9-to-5 grind. To earn one's keep by actually working for it is back in vogue.

On the subject of working for a living, that's now something vendors are doing. With the Y2K and Internet technology spending booms a fast-fading memory, salespeople (with the exception

of Microsoft's reps) had better be humble. Even if, as they say, the technology sells itself, the reps still have to work harder because there's less money to chase. That means they're willing to cut deals with CIOs facing decimated budgets. The balance of power has shifted.

The vendors need the CIOs (and their money) more than the CIOs need new hardware and software.

Now that the northern hemisphere is tilted toward the sun (at least in the northern latitudes), let us be of good cheer. The business world is, on aggregate, poorer now, no doubt. But it is probably saner too. And so, in all likelihood, are you. **CIO**

Opinion Senior Editor Megan Santosus is keeping her nose to the proverbial grindstone, but she'd be glad to hear from you at santosus@cio.com.

CIO.COM What are your reasons to be cheerful? Surely you can come up with a few. Share them in the **ADD A COMMENT** box at the end of this piece online. Go to www.cio.com/daily to find the link.

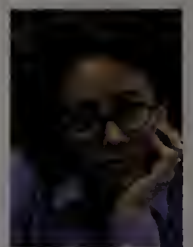


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*SOURCE: **CIO** READER PROFILE STUDY, MRI, AUGUST 2002



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Defensive Postures

Intrusion prevention systems offer the latest countermeasures in the war against hackers, worms and viruses **BY DYLAN TWENEY**

Edited by Christopher Lindquist. Send your thoughts and ideas for future columns to clindquist@cio.com.

THE SQL SLAMMER WORM began its rampage shortly after midnight on Jan. 25, 2003. Within days, the insidious piece of code had infected more than 120,000 computers, slowed Internet traffic, crashed sites and even disabled ATMs, costing companies an estimated \$1 billion in lost

productivity worldwide, according to analyst firm Mi2g. The irony? Slammer exploited a vulnerability in SQL Server for which Microsoft had already issued a patch—six months earlier.

It's not that IT administrators are lazy or negligent—it's that locking down operating systems

Intrusion prevention...Superfast data transfers

and applications has become an almost unmanageable job. The CERT Coordination Center recorded 417 security vulnerabilities in 1999. By 2002, there were 4,129 new vulnerabilities.

This situation makes the newest class of security technologies—intrusion prevention systems (IPSs)—look pretty good. Supplementing patches, firewalls and other traditional approaches to security, an IPS can provide security at the most fundamental levels: the operating system kernel and the network data packet. An IPS can also be cheap insurance: Host-based systems can cost as little as a few

These factors should spark significant growth in the IPS space. Market research company Infonetics estimates the combined intrusion detection and intrusion prevention market will grow to \$1.6 billion by 2006, with IPS accounting for the majority of the growth.

Market Confusion

Intrusion detection vendors, such as Cisco, Internet Security Systems and SourceFire, are retooling their products to proactively stop network attacks. CheckPoint and NetScreen are adding IPS capabilities to their firewalls. And dozens of smaller ven-

Locking down operating systems and applications has become an almost unmanageable job.

thousand dollars per server, while network-based IPS appliances typically cost between \$10,000 and \$90,000, plus ongoing support fees.

"It makes sense to protect the host so that if all else fails, it will have a better chance of standing alone on its own two feet," says Bill Stevenson, information security officer for New Century Mortgage. His company has been using host-based intrusion prevention from Entercept since late 2000 as a major part of the back-field defense for its servers. So far, it's worked: New Century's IPS successfully repulsed Slammer.

Don't Tell Me, Fix It!

Interest in intrusion prevention is increasing, thanks in part to a growing disenchantment with intrusion detection systems (IDSs), which notify administrators of attacks but don't actually stop those attacks. Market maturity is also a factor, as demonstrated by the acquisition of IPS company OneSecure by Netscreen along with planned acquisitions by Cisco (of Okena) and Network Associates (of Entercept and Intruvert).

dors are touting security add-ons, secure Web servers and even ordinary firewalls as "intrusion prevention systems."

The result is a confused marketplace. "Since there are so many different ways to detect an attack, it's very unclear what you mean when you use a term such as *intrusion prevention*," says Pete Lindstrom, research director for Spire Security, an independent analyst company.

Lindstrom and other analysts differentiate true intrusion prevention systems from older technologies, such as firewalls and IDSs, that have been updated with new "prevention" features. Broadly speaking, the new crop of IPS products fall into two categories: host-based intrusion prevention (HIP) products such as those offered by Entercept, Harris and Okena; and even newer network-based intrusion prevention appliances offered by companies including Intruvert, OneSecure and TippingPoint.

Locking Down the Host

A HIP product protects servers and workstations through software agents that sit between applications and the OS's kernel.

Intruder Alert!

Technology Intrusion prevention systems

Anticipated benefit Adds security to networks and computers by intercepting attacks before they do damage.

Hurdles Network-based systems may inadvertently block legitimate traffic. Host-based systems are ineffective against denial-of-service attacks.

Estimated cost \$5,000 to \$90,000

Vendors

Host-based systems:

■ **Entercept Security Technologies**
www.entercept.com
(Acquisition by Network Associates pending at press time.)

■ **Harris STAT Neutralizer**
www.statonline.com

■ **Okena StormWatch and StormFront** www.okena.com
(Acquisition by Cisco is pending at press time.)

■ **Sana Security**
www.sanasecurity.com

Network-based systems:

■ **Captus Networks**
www.captusnetworks.com

■ **Cisco Systems IDS**
www.cisco.com

■ **ForeScout ActiveScout**
www.forescout.com

Internet security systems:

■ **RealSecure Network Protection**
www.iss.net

■ **Intruvert Networks**
www.intruvert.com
(Acquisition by Network Associates pending at press time.)

■ **NetScreen Technologies IDP**
www.netscreen.com
(Formerly OneSecure IDP.)

■ **TippingPoint Technologies UnityOne** www.tippingpoint.com

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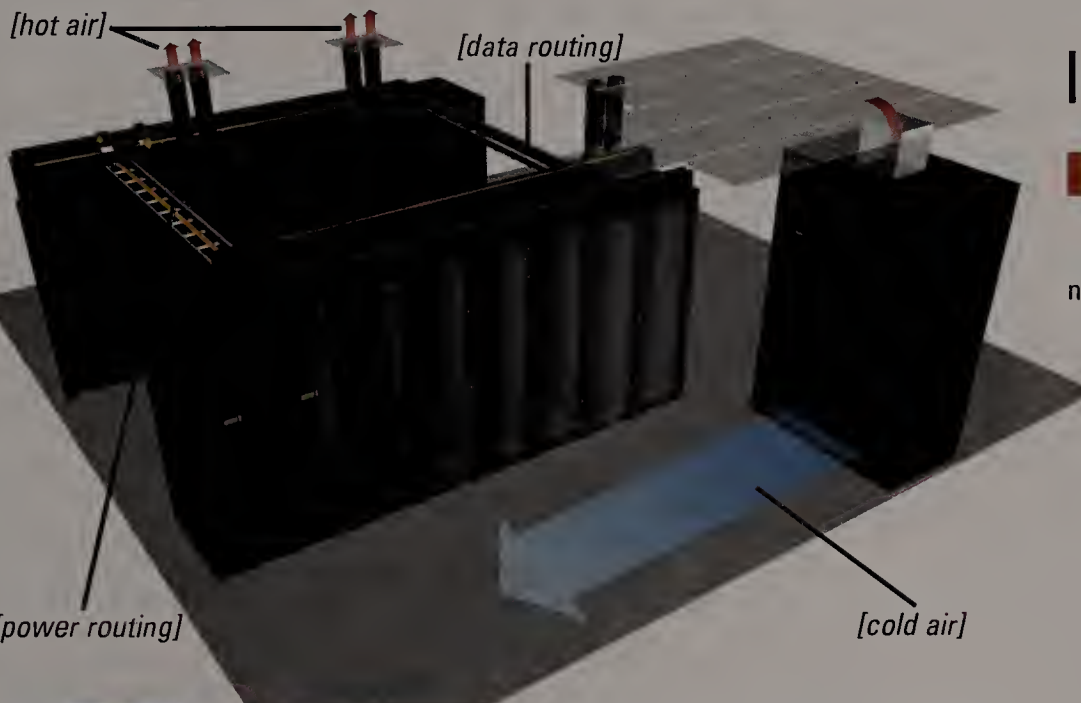
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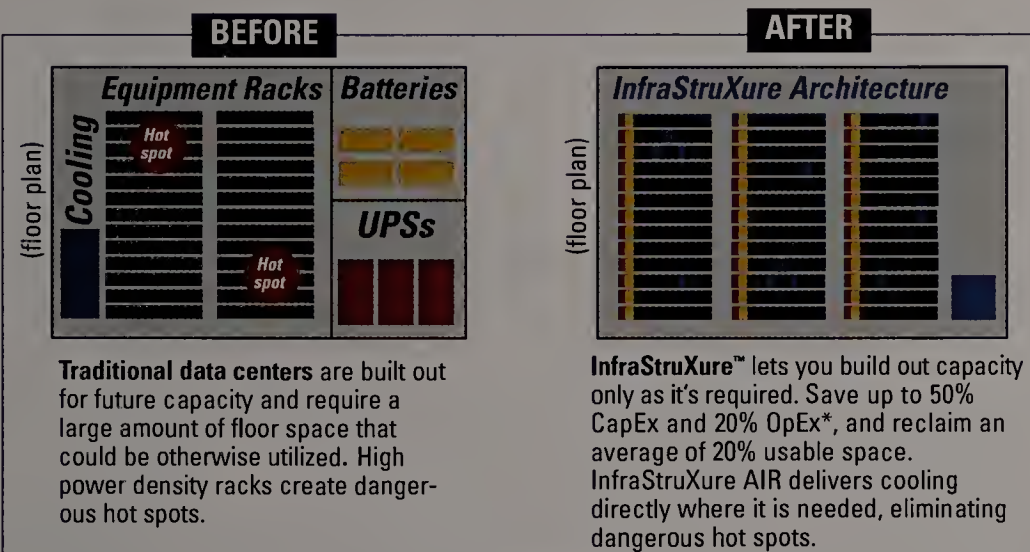
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It intercepts system activity on the lowest level—disk read-write requests, network connection requests, and attempts to change the registry and write to memory—and either allows or denies the activity based on predetermined rules. For example, an application would not be able to modify certain files or change data in the system registry. A HIP system can also block behavior that is clearly malicious,

require constant updates to identify the latest worms, viruses and exploits.

There are downsides to host-based intrusion prevention, however. It's useless against intrusions aimed at your network in general—such as denial-of-service attacks. You also need to install it on every system you want to protect, which can create a deployment headache. (HIP vendors have only recently started adding

specially coded, “tagged” response. If the attacker then tries to act on the tagged information, ActiveScout immediately recognizes that an attempted attack is in progress and can shut off the connection before any damage occurs.

Network-based intrusion prevention can be useful in situations where host-based protection is impractical and firewalls aren't effective—for instance, against attacks that originate within your own network. University of Dayton Associate Provost and CIO Thomas Danford, like many higher education IT executives, has to deal with students bringing worms and viruses onto the internal network regularly. “Before you know it, we've got worms slamming around all over the place,” says Danford, who calculates that the university receives 3,200 attacks on an average day. The solution: TippingPoint's UnityOne IPS, which Danford installed behind the firewall to shut down suspicious traffic. When the Slammer worm hit in January, says Danford, “we didn't experience any problems at all.”

Many IT managers, however, are reluctant to trust network-based intrusion prevention, in part because of the risk of service interruption. If your IDS misidentifies legitimate traffic, the false alarm is merely annoying; but an IPS that shuts down a customer connection by mistake could hurt your bottom line. “When people need to get to your system to trade, a couple of seconds of downtime could get you a seriously irate customer,” says a chief security officer at a financial services company who declined to be named. “For automated blocking, we think [intrusion prevention] systems are not mature enough to rely on yet.”

To the extent that network-based systems rely on signatures to identify

Network-based intrusion prevention can be useful in situations where host-based protection is impractical and firewalls aren't effective.

such as rewriting OS executables. The upshot is that most security exploits simply won't work. Attackers might be able to get through your network defenses to a server, but they couldn't actually do anything once they got there.

For Stuart McClure, president and CTO of Foundstone, host-based intrusion prevention is a much-needed stopgap measure. Foundstone, a security software and services company, uses Entercept to protect its servers against known vulnerabilities without having to install security patches first. This lets the company test and install patches on a monthly schedule instead of rushing to install them as soon as they are released.

A HIP benefits from contextual information about the server being attacked, which can make it more efficient than blanket network security. “You can get a microscopic analysis of what's going on,” says Ed Skoudis, vice president of security strategy for Predictive Systems, an IT consultancy that works with both Okena and Entercept. A HIP system on a Solaris box can safely ignore attacks aimed at Windows systems, for instance. And because they focus on behavior, HIP systems can resist never-before-seen attacks, whereas network-based IDS and IPS systems

enterprise-level management tools to their products.) HIP also uses some system resources, although McClure estimates only 2 percent to 5 percent of CPU time.

What's more, HIP systems truly are the last line of defense. “They only function when things have gotten seriously out of hand,” says Martin Roesch, founder and CTO of security services provider SourceFire. “Every car should have airbags, but wouldn't it be nicer to avoid the accident in the first place?” Still, for providing an additional layer of security on critical hosts, HIP is a compelling option.

Network-Based Protection

In general, network systems sit “in line,” intercepting network traffic, scanning it for suspicious activity, and either blocking it or passing it along. Such systems use a range of techniques, from IDS-like signature scanning (looking for telltale strings of bytes) to protocol anomaly detection (figuring out when a packet of data is trying something not ordinarily permitted by its data transmission protocol).

Some network intrusion prevention systems take more devious approaches to network protection. ForeScout's ActiveScout, for instance, responds to suspicious activity (such as port scanning) by sending a

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attacks, they'll need to be updated—and they may have difficulty stopping brand-new attacks. It's also important to consider the impact on network performance when installing an in-line system—if it can't support your network's maximum bandwidth utilization or introduces significant latencies, it will be a bottleneck. For that reason, many vendors are moving toward appliances (some of which support gigabit speeds), rather than software.

Where IPS Fits In

Almost no one claims that any type of intrusion prevention system will replace firewalls and other mainstays of network security outright. Instead, analysts say, these systems make the most sense as part of a layered security strategy that makes use of several different technologies at multiple points in your network.

Nor will IPS kill the intrusion detection market, at least in the short term. If an attacker makes it past your other defenses (including the IPS), an IDS provides the information you need to contain the damage and prevent future attacks.

Ultimately, predicts Richard Stiennon, a research director at Gartner, network-based IPS capabilities will be integrated into firewall appliances. The host-based IPS, say Spire Security's Lindstrom and other experts, will likely become more agent-based, centrally managed and ubiquitous—perhaps as part of an enterprise's overall systems management strategy. But one thing is certain: As the number of attacks and vulnerabilities continues to grow, so will interest in intrusion prevention technologies of all kinds.

"Return on security investment is something that's very, very difficult to show," says New Century's Stevenson. "But you pick up the paper every couple weeks, and to know that we've bypassed the latest critical worm or virus that's on the Internet—that's return on investment." ■

Dylan Tweney (dylan@tweney.com) is a freelance writer based in San Mateo, Calif.



UNDER DEVELOPMENT

Broadband

WAN Speed Record

INTERNET TRANSMISSIONS using DSL and cable modems seem like pony express deliveries compared with the superfast data transfer achieved by scientists at the Stanford Linear Accelerator Center (SLAC). The scientists were able to transmit 6.7GB of data—the equivalent of four hours of DVD-quality movies—from Sunnyvale, Calif., to Amsterdam, Netherlands (6,800 miles), in 58 seconds. The rate they achieved, 923Mbps, is more than 3,500 times as fast as a typical home Internet broadband connection.

SLAC is part of an international team—along with Caltech, the National Institute for Nuclear Physics and High Energy Physics in Amsterdam, and the science faculty of the Universiteit van Amsterdam—that was awarded a data-transfer speed record by the Internet2 consortium. The consortium is working to develop and deploy advanced network applications and technologies in its effort to create the next generation of the Internet.

The record-setting transmission—completed in February 2003—used advanced technology from vendors Cisco Systems and Level 3 Communications as well as research organizations NetherLight, StarLight, Surfnets and TeraGrid. According to SLAC, the need to transfer and analyze vast amounts of data produced by particle physicists studying the fundamental building blocks of matter motivated the record. But Les Cottrell, assistant director of SLAC computer services, sees potential benefits for business.

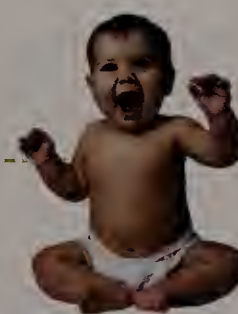
"I could see this having a big effect on media distribution; for example Blockbuster could start shipping movies to someone's home in a matter of minutes," Cottrell says. A company like Boeing could transmit product design data across the country rather than ship storage tapes by truck. Other high-bandwidth applications could include global climate forecasting, distance learning, human genome research and the ability of doctors to share patient information from multiple sites around the world in real-time.

When will such high-data transfer rates become commonplace? That's hard to predict, says Cottrell. But he adds that he would not be surprised to see some of these applications occurring within the next 10 years.

—Bob Violino



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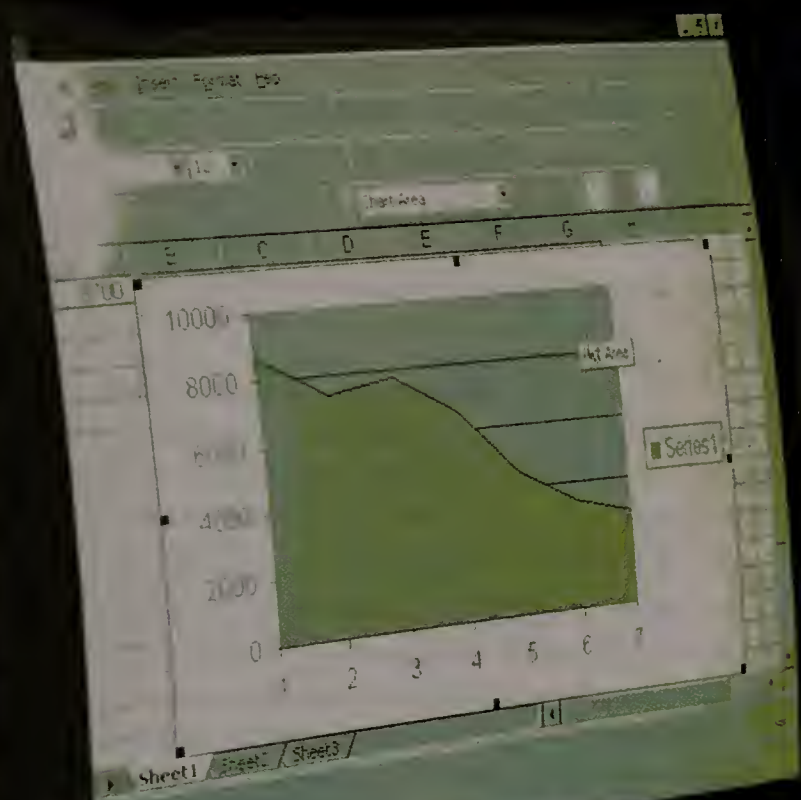
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EXECUTIVE Summaries

June 15, 2003

COVER STORY DaimlerChrysler's CIO Survivor

By Christopher Koch | 48

Sue Unger, the 54-year-old CIO of DaimlerChrysler, has survived two waves of management purges since Germany's Daimler-Benz purchased Chrysler, and in fact has gained power since the merger in a company that has swept away Americans at its uppermost levels and replaced them with Germans. Her success has defied the odds in several ways—she's a woman in one of the most competitive, macho industries in the world, she lacks a traditional IT background, and she's not a native of the dominant country or culture of corporate headquarters. One key to success was her investment in learning every important aspect of the car business. Another is her sharp people skills. She deftly leverages the relationships forged in her business function stints. As a non-IT background CIO, she avoids resentment in the IS ranks by letting her technical lieutenants manage relationships with their business customers while she focuses on the overall strategy. She still faces merger-related resistance and cultural hurdles, but no one can claim she doesn't know the car business.

"The fact that she listens to people, evaluates what they have to say and takes a position that is not political is what got her through it."

—GARY VALADE, CHRYSLER EVP OF GLOBAL PROCUREMENT AND SUPPLY, ON CIO SUE UNGER'S SUCCESS IN NAVIGATING THE WATERS OF THE DAIMLERCHRYSLER MERGER

E-Procurement

By Malcolm Wheatley | 58

TODAY IT'S POSSIBLE TO BUY ALMOST ANYTHING electronically. But moving beyond paper clips is difficult. Direct (raw) materials and services can be multimillion-dollar deals, often negotiated over months. But e-procurement's characteristic deliverables—better productivity, faster processing, greater visibility, the elimination of maverick buying—can have a proportionately higher ROI when applied to direct-material sourcing. For example, at Reliant Pharmaceutical all purchases now go online through Ariba, with an expected ROI of 400 percent. Bill Lawson, CIO at Ametek, claims an average 20 percent savings by sourcing 12 commodity groups (among them machine tooling, electrical supplies and computer hardware) through an Oracle Exchange e-procurement portal. Newly available collaborative technology allows RFPs—accompanied by CAD drawings and specifications, suppliers' requests for additional information, and bids—all over the Web.

Alignment Tactics

By Todd Datz | 72

GROWTH AND INNOVATION have taken a backseat to relentless cost-cutting and short-term payback. The pressure to do more with less has intensified. However, CIOs who have a good relationship and a strong strategic alignment with the business side will fare well. Those who don't are imperiled—it's now or never for alignment. CIOs who get it share six successful alignment habits: Commit to the care and feeding of top management, govern wisely, assign direct reports to be business unit ambassadors, join hands with business leaders at every opportunity, advertise the technology strategy, and make IT user-friendly.

Next-Generation IT Architecture

By Larry Downes | 80

THE FUTURE OF I.T. ARCHITECTURE WILL BE the ability to distribute small units of software over the Internet, not just to distant users but to destinations such as equipment on the factory floor and packages on store shelves. This will create a new class of information products and services that interact with each other using sophisticated messaging and security protocols. Organizations adopting this architecture will see reductions in development and maintenance costs and new forms of information exchange up and down the supply chain, in turn creating new sources of value. But as in previous architecture transitions, there will be more organizational than technical challenges. IT professionals must not only cultivate new technical skills but also a better understanding of their companies' business. Identifying and capitalizing on new revenue opportunities will only happen if the boundaries between IT and business users are as permeable as the information supply chain data is free-flowing.

Emerging Technology: Intrusion Prevention

By Dylan Tweney | 95

INTRUSION PREVENTION SYSTEMS (IPSs) safeguard the operating system kernel and the network data packet. Interest in IPSs has grown in part because of disenchantment with intrusion detection systems, which only notify IT administrators of attacks in progress. Host-based IPSs protect servers and workstations through software agents that sit between applications and the operating system's kernel. They intercept disk read/write and network connection requests and attempt to change the registry or write to memory—and either allow or deny the activity based on predetermined rules. However, they are useless against intrusions aimed at networks, and they need to be installed on every host. Network-based IPSs, less established in the marketplace, sit "in line," scanning traffic for suspicious activity. Many IT managers are reluctant to trust network-based intrusion prevention, in part because of the risk of service interruption. No one claims that IPSs will replace firewalls, but they make sense as part of a layered security strategy.

Get Off the Backup Treadmill

Sony AIT data storage solutions help companies of any size automate tape backups, delivering real ROI through IT time savings.

Government regulators are requiring organizations from financial to health care to keep copious long-term records. Disaster recovery and business continuity requirements are more stringent than ever, as organizations try to prepare for the worst. And all the while, IT organizations are stretched to the limit, struggling to meet these basic day-to-day demands.

Clearly, it is imperative for any organization to routinely back up valuable data, but it's not imperative that they spend an inordinate number of IT hours doing it. Let's say it takes a single IT administrator 15 minutes to load, unload and check a backup tape, and that person has to deal with just two tapes each day. That's at least 10 hours of IT time per month spent juggling tapes—hours that could be dedicated to more strategic endeavors.

Automated tape systems can get organizations off the backup treadmill. Such systems allow you to consolidate multiple drives into one solution that can be loaded with enough tapes to handle backups for days or weeks. All the required backups and tape rotations are handled on a predefined schedule, without human intervention.

Once a luxury for only large organizations with big budgets and large IT departments, automated tape storage solutions such as those in the Sony Advanced Intelligent Tape™ (AIT) automation family are now cost-effective solutions for small and midsize organizations. Indeed, the fastest growing segment in the tape automation market is for systems with 20 cartridges or less. Even small companies, workgroups or departments with individual Digital Data Storage® (DDS) tape backup systems can gain significant business benefits. Larger organizations can leverage the performance, capacity and reliability of a Sony AIT library to enable up to 30 days of unattended backup, boosting cartridge utilization and simplifying management.

Traditionally, many organizations use individual tape drives to back up critical servers, adding additional drives as demand dictates. Consequently, these tape drives are often deployed in a decentralized fashion, requiring that someone physically load fresh tapes into each drive daily or weekly, and to verify that backups complete successfully. With data volume doubling or tripling every year or two, it is difficult to keep up as the number of cartridges grows. Before long, multiple administrators are collectively spending an inordinate amount of time swapping tapes and attending to other mundane chores. This is particularly bur-

densome in systems with limited tape cartridge capacity.

While such organizations clearly need an automated tape solution, even those with only one tape drive can benefit. Single-drive tape autoloaders and multiple-drive tape libraries are integrated solutions that have space for anywhere from eight to hundreds or even thousands of tapes, along with a mechanism to automatically replace or rotate the tapes on a preset schedule.

When using an automated solution, an administrator loads the tape drives with the appropriate tapes and uses backup software to specify when tapes should be switched, what files should be backed up and how often. Most systems notify the administrator if something is wrong, such as if a tape runs out of space. Otherwise, the administrator simply needs to check the unit at the end of the cycle, be it seven days or 30, and load new tapes. Consider the time savings compared with manually configuring the backup

terms of storage density per cubic foot.

In addition to rack-mountable storage systems, Sony has desk-side tape libraries that allow users to load up to 15 cartridges in a single removable magazine. This provides enough capacity for two weeks worth of tapes. Sony also offers 30-cartridge units that can provide up to one month or more of hands-free backups.

All of Sony's automated tape libraries include a number of important capabilities and characteristics, including:

- **Remote administration:** Sony's tape libraries all have the capability to be controlled and monitored from a remote location.

- **High reliability:** Sony AIT-3 drives are rated at up to 400,000 hours mean time between failure (MTBF) at 100% duty cycle—far exceeding most other types of traditional backup drives.

- **Fast file access:** Sony drives were the first in the industry to include the Memory in Cassette (MIC) feature, which provides 64K-bit flash memory within the tape cartridge to index information and the location of data on the tape. The feature speeds data access and retrieval, making AIT one of the fastest tape formats in terms of data retrieval.

- **Future growth path:** Currently in its third generation, AIT has a defined and proven roadmap that has seen performance and capacity double with each new generation. In addition, all three generations of AIT drives available today are both read and write backward-compatible.

- **Industry support:** AIT drives work with all major operating systems, including Windows, Linux and Unix, as

well as with the majority of backup software packages, including Computer Associates' CA BrightStor ARCserve, Veritas Software's Veritas Backup Exec and NetBackup, Legato Systems' NetWorker and IBM's Tivoli Storage Manager.

Sony's AIT automated tape backup solutions are also ideally suited to address the growing need for networked backup. Rather than installing and managing dedicated tape drives or libraries near each server, an organization can consolidate all storage functions and back up data from various servers across the network, further reducing deployment complexity and improving IT productivity.

Whatever the configuration, high-speed, high-capacity AIT tape systems can reduce the pressure on your backup window by cutting down on the time it takes to complete a backup or restore. Automating your daily or weekly backups provides even more benefits—more reliable backups performed without manual intervention, freeing up valuable IT hours that can be spent on projects that contribute to the bottom line.

Progression into Automation

Single/dual drive library or autoloader



- One or more drives, many tapes
- Excessive manual effort

Benefits:

- Higher capacity and performance
- Hands-off, unattended backup

each day, swapping tapes and making sure each backup is complete. Then, consider that the time savings and increase in reliability are even more dramatic when it comes to retrieving data, when time is even more critical.

Sony AIT

Sony's AIT tape drives and libraries were designed from the ground up for automation, with a range of models that allow organizations to centralize their backups and upgrade existing library capacity. For example, Sony's LIB81, the first 1U autoloader in the industry, has one tape drive and capacity for eight cartridges. The flexible range of capacities supplied by Sony AIT-1, AIT-2 and AIT-3 tapes offer enough for a week's worth of backups, with room to spare for a head cleaning cartridge or a copy of a previous week's or month's backup tape. Sony's LIB162 is a larger unit with space for two tape drives and up to 16 individual tapes, all within a 2U rack-mountable design that can fit in a limited space. Its storage capacity of 0.8 terabytes (TB) native and 2.08TB compressed puts it among the leaders in

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Sony AIT Solutions

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